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MEDICAL JOURNALISM THROUGHOUT THE WORLD.[1]

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It is very appropriate in any discussion on medical or scientific writing in 1960 to recall that it is the three-hundredth anniversary of the founding of the Royal Society. This is the oldest of the existing scientific societies, and its *Philosophical Transactions*, which first appeared in 1665, is the oldest existing scientific periodical. Of the original 119 members, 21 were physicians, and medicine has always played a prominent part in the Society's proceedings. It is perhaps a little chastening to note, in relation to our purpose today, that incorporated in the coat of arms of the Society is the motto *Nullius in Verba*.

The majority of early scientific publications were in Latin, and it was about 1700 that journals began to publish in the native tongue. British medical periodicals began to appear towards the end of the eighteenth century, but were mostly translations from foreign journals. The first of the modern type journals, and the first weekly journal, was *The Lancet*, which commenced publication on October 15, 1823. The early numbers were provocative, belligerent and, at times, scurrilous. The subject matter was collected around the weekly lectures of Astley Cooper, and the preface to the first number expressed the hope that, presumably as a result of the arrival of *The Lancet* on the scene, "the age of mental delusion has passed and mystery and concealment will no longer be encouraged". Volume 1, No. 1, also contained criticisms of "The Rivals" and "Much Ado About Nothing", both of which were currently showing at Drury Lane. There was a report of some acrimonious correspondence between Charles Lamb and Robert Southey, the latter being referred to editorially as "this sack hunting hypocritical rhymer".

One year later, reviewing progress, an editorial notes Dr. Johnson's strictures in the *Quarterly Review* on the "Immorality of giving publicity to medical lectures". After some years the journal settled down to become the fine publication that it is today. Its destinies were guided by the Wakley family until 1909 (Horner, 1932).

[1] Read at a Conference on Medical Journalism held in Sydney on October 26, 1960. It is also published in the *Bulletin of the Post-Graduate Committee in Medicine, University of Sydney*, February, 1961.

The Journal of the American Medical Association was first published in 1883 after prolonged deliberations (Hammond, 1958). In 1849 it was suggested that the American Medical Association should produce its own journal as a contribution to the medical literature of the United States of America. At that time there were already some 20 journals being published, including *The American Journal of the Medical Sciences*. The association, however, considered that the time was not ripe for the establishment of its own journal, and resolved that "the only legitimate means within our reach for the encouragement and maintenance of a national medical literature are to increase the standard of preliminary and professional education required of those who would enter the medical profession; to promote the circulation among the members of the profession of the medical journals of the day; to encourage the establishment of district medical libraries and to induce every practitioner to cultivate with care the fields of observation and research that are within his reach". The issue was raised regularly at subsequent meetings. In 1856 the remedies for literary ills of the day were summed up as follows: "to prevent individuals in tenderest immaturity of knowledge thrusting themselves forward as teachers, to make scholars of the ignorant and wise men of fools, to repress ridiculous ambition and boundless conceit, to persuade all writers to recognize the difference between authorship and bookmaking, to put down reckless plagiarists and shallow thinking, to keep men from writing books by way of advertising themselves or their schools, to force judicious excise on foreign importations and wither the pestilent class of editors who bring out foreign works and divide glory with their authors without sharing labour". The passage goes on in this vein and ends up on a note of utter hopelessness. The journal was eventually established with a circulation of 3500, and has grown rapidly so that at present the circulation exceeds 200,000.

The difficulties and trials of the embryo and developing journal are illustrated by the growth of *The Journal of Clinical Investigation* (Brainard, 1959). This started in 1924 as the official publication of the American Society for Clinical Research. Although subsidized by the Rockefeller Institute, for the first 15 years it struggled with financial insecurity and restricted circulation, and at times came very close to foundering. After two years the circulation was 278 and after four years 300. In 10 years the figure was 550 and it was more than 15 years before the target of 1000, the level at which the journal could be self-supporting, was achieved. The financial and other problems encountered in establishing a new journal are reviewed in the Centenary Number of the Society in 1959.

It is a tribute to the doggedness and determination of those responsible for the production of medical journals that, in spite of all difficulties, the growth of medical journalism has been rather like a volcano in eruption.

In 1881 John Shaw Billings, of the Library of the Surgeon-General's Office, United States Army, read a paper entitled "Our Medical Literature" at the Seventh International Medical Congress in London (Brodman, 1959). Even at that time he envisaged a situation in which everyone in the world not actually engaged in writing would be occupied indexing, cataloguing and generally caring for the annual literary product. At that time there were some 850 medical periodicals (U.S.A., Germany, France, Italy, the British Commonwealth and Spain, in that order, produced about 85% of them). In 1957 the National Library of Medicine, Washington, dealt with some 5000 periodicals. In Billings's day, each journal averaged 23·5 articles per year — a total of 20,000 articles. The figure now has been estimated at 200,000. Billings estimated that there were 180,000 physicians in the world of 1880, and a W.H.O. estimate of present numbers is 1,236,000. One can calculate from these figures a sort of medical literary rate in which in 1880 there was one article per year for every nine practitioners. At present the rate is one for every six. This comparison will, perhaps, bring comfort to some, particularly editors among the audience, who may have feared that fewer doctors today can read and write compared with former times.

The increase in volume of medical literature may be emphasized by the observation that, between the first edition of the "World Medical Periodicals" in 1951 and the second edition in 1957, 1400 new titles were added. It is true that 600 were removed, but even so the net gain is approximately 800. This represents over 100 new journals per year, two a week, or one every three and a half days. The National Library of Medicine in Washington, in their efforts to keep abreast, estimate that they require an increase of 2000 linear feet of shelf space each year, or nine and a half miles in the next 25 years (Brodman, 1959).

A very complete list of current medical periodicals has been produced in the "World Medical Periodicals". As well as an alphabetical list, journals are classified into countries of origin and also into specialities. Perhaps its most valuable function is to provide a complete and authoritative list of abbreviations of journal titles. These are based on the code of rules adopted by the "World List of Scientific Periodicals". The importance of such a standardized list throughout the world is obvious, and many journals now conform to it. The first edition was published jointly by U.N.E.S.C.O. and the World Health Organization about 1951. It was the product of deliberations over a period of six years of a Co-ordinating Committee on Abstracting and Indexing in the Medical and Biological Sciences. The second edition, published in 1957, was taken over by the World Medical Association and the International Union of Medical Press. Dr. Hugh Clegg, Editor of the *British Medical Journal*, was Chairman of the Advisory Committee, and both editions were prepared by Mr. L. T. Morton, of the *British Medical Journal* staff.

The list contains, in all, 4772 titles. Pharmaceutical, dental and veterinary journals are included and, as well as journals currently published, a number of important ones which have ceased publication since 1900 are also included. By far the greatest number are published in the United States of America, 639 current titles; 112 have ceased publication. The representative figures for Germany are 287 and 3, India 71 and 3, United Kingdom 111 and 73. Australia with 28 and New Zealand with 13 have a combined total of 41 current journals and a further 8 have ceased publication. In Brazil there are 205 current journals and 6 suspended, and in Argentine 168 and 6 respectively.

One of the major factors in the increased numbers of medical journals is the development of the specialities. The implications of specialist practice have been recognized for a long time. Thatcher deplored the tendency in 1888. Billings refers to it several times in articles in the 1880's, and it has constantly been discussed since (Brodman, 1959). There are at present 113 journals devoted to tuberculosis; 8 have ceased to be. Thirty-eight are devoted to venereal disease and 14 more are out of print. There are 99 journals of neurology and, encouragingly, 29 have ceased publication. There are at present 30 journals of hæmatology; unhappily, none as yet have ceased to publish.

The functions of a medical journal are threefold: first, and perhaps most importantly, the recording and disseminating of new knowledge by means of original articles; secondly, a broader role of teaching and keeping readers up to date by the review and seminar type articles; and thirdly, a sort of newspaper function dealing with matters of organization and medico-political affairs. The second and third serve important local interests. It is in respect of the first function, the recording and reporting of new knowledge, that an overwhelming situation is developing. This type of information is in no sense regional or local, and if it is not disseminated throughout the entire medical world, the system of medical journalism is inefficient and there

is wasted effort and lost opportunity. The two major barriers to adequate dissemination are, firstly, the sheer bulk of material produced and, secondly, the difficulty of language. For these reasons, no physician or researcher can hope to screen the whole literature on his subject, no matter how limited his field. Yet the need for complete cover is imperative. The solution, of course, lies in the indexing and abstracting of journals which represent the most important advance in the field of medical journalism in the last few decades.

The ambitious project of indexing in English the whole world medical literature has been undertaken up till now by two bodies. The American Medical Association produced the *Quarterly Cumulative Index Medicus* from 1916. This listed titles of articles by subject matter, and authors, alphabetically. It has been of incalculable value, but unfortunately its task was too great and it fell sadly behind schedule. The National Library of Medicine in Washington, formerly the Library of the Surgeon-General of the United States Army, published the *Index Medicus*, listing titles of articles in each number of the respective journals, since 1879. In 1927 the two combined their efforts, but in 1932 they again went their separate ways. The National Library of Medicine began in 1941 the *Current List of Medical Literature*, at first weekly and later monthly, with biannual cumulative lists of titles arranged by subject matter alphabetically. Though published promptly, the work was cumbersome to use, and when it was available, the *Quarterly Cumulative Index Medicus* was preferred by librarians and readers. This year the two bodies have again combined their efforts to provide a complete, prompt and convenient indexing service. The National Library of Medicine, using modern mechanized photographic printing methods, produces a monthly list, the *Index Medicus*, which is marketed by the Government Printing Office; the American Medical Association using these data will publish and market the *Cumulative Index Medicus* annually. The success of the project will depend on the balance between the efficiency of the two organizations on the one hand, and on the rate of growth of medical journalism on the other.

"World Medical Periodicals" lists 13 indexing journals; four are Italian, one is German and one is Spanish. The rest are British or American, and, apart from the two mentioned above, these cover only a special field, such as history of medicine or cancer. More recently, the Postgraduate Medical School in London has produced weekly an unpretentious but useful cyclostyled sheet listing the titles of articles in each journal received during the preceding week. Three hundred journals in all are covered. The Post-Graduate Committee in Medicine in the University of Sydney, by arrangement with the Postgraduate Medical School in London, distributes these weekly lists throughout Australia, the period of delay being approximately two weeks.

Abstracting journals provide an even more important, though necessarily less complete, cover of newly reported medical knowledge. These are usually specialized, but the *Abstracts of World Medicine*, published monthly by the British Medical Association in London, maintains a wide cover. "World Medical Periodicals" lists 77 abstracting journals, of which eight are British and 12 American. The 19 sections of *Excerpta Medica*, published monthly in Holland, are also in English. A series of nine journals is published in Berlin and 21 in Moscow. By an efficient indexing and abstracting service, organized on a world-wide basis and supported by correct titling of articles and an effective reprint system, the barriers of language and sheer volume of data could be largely overcome. It could be that an effective zoning system would be another rational procedure. It seems illogical to attempt to send all medical journals everywhere in the world. It would surely be better for the majority of journals to develop a firm local market, with an efficient and rapid zonal abstracting service distributing summaries of all articles from that zone rapidly throughout the world.

It is presumptuous for a small and inexperienced gathering such as this, however hopeful and enthusiastic, to set out to solve the global problems of medical journalism. This need not prevent us, however, from discussing them. It would be a fine thing for medical journalism in Australia if an association of editors grew out of this conference. In 1869 an Association of American Medical Editors was formed. In 1900 an international union of the medical Press was formed, with 16 countries being represented. This lapsed during the First World War. In 1924 a Federation of the Latin Medical Press was formed, but this also lapsed during the Second World War. In Brussels in June, 1953, the two organizations were revived and the present International Union of Medical Press came into being. Its third congress took place in 1957 in London. At that congress there were 45 members, generally admitted on a national basis, though individual journals were also admitted to membership (*Brit. med. J.*, 1957).

There would be many useful functions that an association of editors in Australia and New Zealand could perform, and, at the same time, it is very important that Australia and New Zealand should be represented at future world conferences of the medical Press. It seems essential that the organization of medical journalism throughout the world should be constantly reviewed, and our interests in the matter are considerable.

Summary.

Modern medical periodicals arose early in the nineteenth century, and *The Lancet*, in spite of its rather disreputable start, holds pride of place as the oldest surviving English medical journal.

Since that time there has been a phenomenal increase in the numbers of medical journals, leading to major difficulties in the satisfactory dissemination of original work from all parts of the world.

Some important developments which may help to solve these difficulties include: (*a*) the publication of "World Medical Periodicals", an authoritative list of 4772 journals in alphabetical order, and also classified into country and subject matter, with a standardized code of abbreviations; (*b*) the publication of efficient indexing and abstracting journals, particularly the new *Index Medicus* and *Quarterly cumulative Index Medicus*; (*c*) The recent revival of the International Union of Medical Press.

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MEDICAL JOURNALISM IN AUSTRALIA AND NEW ZEALAND.[1]

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IT is perhaps not without significance that the first medical man known to have landed in Australia was a rugged individualist. This was an apothecary, Jerome Cornelis, supercargo of the ship *Batavia*, which struck a

[1] Read at a Conference on Medical Journalism held in Sydney on October 26, 1960. It is also published in the *Bulletin of the Post-Graduate Committee in Medicine, University of Sydney*, February, 1961.

reef off the coast of Western Australia in 1629 (Cohen, 1953). True, Cornelis was an unmitigated scoundrel, a mutineer and murderer, who does medicine no credit, but his individualism and enterprise (albeit shady and unsuccessful) foreshadowed an attitude that characterized many of the early doctors of the Australian colonies. No doubt they had to be like that to get anywhere.

Certainly those who ventured into the stormy waters of medical journalism in our early days, whatever other qualities they may have had or lacked, tended to be individualists. It may be that this is a characteristic of medical journalists in every generation; but I venture to suggest that some of the early promoters and editors of medical journals in these parts had a streak of independence and floridity in attack and expression which most of us, even if we possessed it, would find best kept firmly under control.

The Nineteenth Century.

For many years in the early history of the colonies, medical men who wished to venture into print had nowhere else to go in Australia but to the non-medical Press. The first medical paper known to have been published in this country was an article entitled "General Observations on the Small-pox" in *The Sydney Gazette* of October 14, 1804. The author was Thomas Jamison, M.D., principal surgeon in the colony (Ford, 1954). It was not until 1846 that the first medical journal that we know of, the short-lived *Australian Medical Journal*, appeared in Sydney, only to die a year later, and not till 1856 that the ground was broken in Victoria with another *Australian Medical Journal*. A. M. McIntosh (1951) has advanced good reasons for suggesting that there was an earlier journal in Sydney, but nothing is known of it. However, even with the *Australian Medical Journal* in existence in Sydney, the senior surgeon of the Sydney Infirmary, Dr. George Nathan, apparently saw nothing wrong in publishing his views on the new anæsthetic, ether, in *The Sydney Morning Herald* in 1847. With the expiry of the first *Australian Medical Journal*, the lay Press again became the only avenue of medical publication in Sydney for 23 years, and this avenue was used in a way that, to us today and perhaps to many then, must be considered incongruous.

Meantime, the other *Australian Medical Journal* had been commenced in Victoria in 1856; and under various names it and its direct successors have had continuous existence to our own day, having merged into THE MEDICAL JOURNAL OF AUSTRALIA in 1914. During the 40 years that the *Australian Medical Journal* was published in Victoria under that name, six other medical journals came and went in Victoria; they were the *Medical Record of Australia* (1861-1863), the *Melbourne Medical Record* (1875-1877) the *Medical and Surgical Review (Australasian)* (1863-1865), a new series of a journal with the same title as the foregoing (1873-1874 or 1875), the *Australian Medical Gazette* (1869-1871?) and the *Intercolonial Quarterly Journal of Medicine and Surgery* (1894-1896). With the doubtful exception of the *Australian Medical Gazette*, none of these lasted more than two years. The *Intercolonial Quarterly Journal of Medicine and Surgery* was amalgamated with the *Australian Medical Journal* to form the *Intercolonial Medical Journal of Australasia*. The title *Australian Medical Journal* was resumed for this journal in 1910. In New South Wales the *New South Wales Medical Gazette* lasted from 1870 to 1875, the *Australian Practitioner* from 1877 to 1878 and *The Australasian Medical Gazette* from 1881 to 1914, when it merged with the *Australian Medical Journal* to form THE MEDICAL JOURNAL OF AUSTRALIA.

This is a quick summary of the principal medical journals in Australia which preceded THE MEDICAL JOURNAL OF AUSTRALIA. It is not intended to be in any way a condensed history of those journals; others have covered this ground, and their papers are available (Cumpston, 1914; McIntosh, 1951; Gandevia, 1952); to them I am in debt for much of the material in this paper, which does not in itself pretend to be a piece of original historical research. My purpose has been to indicate the essentially passing character of these journals of the nineteenth century, with the two notable exceptions of the *Australian Medical Journal* in Victoria, which lasted in effect for 58 years, and *The Australasian Medical Gazette* in New South Wales, which lasted 33 years, both going out of existence voluntarily to bring THE MEDICAL JOURNAL OF AUSTRALIA to birth.

For our purposes it is instructive to study how these journals came into existence and why they either flourished to a ripe age or perished in infancy. Unfortunately, the cause of death in some instances remains obscure, but there seems little doubt about the secret of vitality of the two which survived. Shortly after the middle of the last century, Frederick Milford declared his belief that the coexistence of a medical society and a journal was essential for the survival of either. His belief was certainly vindicated in *The Australasian Medical Gazette* and the *Australian Medical Journal*. *The Australasian Medical Gazette* was founded within a year of the formation of the New South Wales Branch of the British Medical Association in 1880. Originally it was a commercial venture, under Milford's honorary editorship; but Milford, it should be remembered, was also secretary of the New South Wales Branch of the British Medical Association, so that the relationship of Branch and *Gazette* was close. It was taken over by the Branch in 1895. The first issue of the *Australian Medical Journal* appeared within six months of the formation of the Medical Society of Victoria in 1855, and it was published under the auspices of the Society until 1907, being for all but a short interval the official organ of the Society. The *Journal* — and the Society — had, in the *Journal's* own words in 1895, a "long and often troublous and chequered career", but the *Journal* survived with certain changes of name up to 1914, and the Society still flourishes in symbiosis with the Victorian Branch of the British Medical Association, with which it has been fused since 1907. Both of these journals had lots of troubles, but it seems that Milford was right, and the association of each with a medical society was its salvation; each in its turn contributed to the survival of the society.

What of the other journals? Let us look first at the New South Wales group. The first *Australian Medical Journal*, published in Sydney from August, 1846, to September, 1847, was edited first by George Brookes, the senior colonial surgeon, and then by Isaac Aaron; publication ceased, McIntosh states, partly because of increase in the editor's professional engagements, but principally because of want of support from members of the profession. It certainly had a vigorous editor in Isaac Aaron, who had had a hand in it from the beginning, but it did not succeed. That it was "probably premature" was the diagnosis of its long-delayed successor, the *New South Wales Medical Gazette*, which appeared in 1870 and lasted five years. Frederick Milford was responsible for the *New South Wales Medical Gazette*, which was started, at Milford's instigation, by the Association of Medical Officers of the Defence Force, with Aaron and Ward as editors. McIntosh comments:

> After the first year, as they had lost money, the Association decided to give up the *Gazette* and Milford took it over as proprietor and sole editor. It was only his strong sense of duty and his belief in the importance of the journal that impelled him to carry on. He had repeatedly indicated that he would hand over his task to any medical man who would guarantee its publication for twelve months. Finally, in April, 1875, he found he could no longer continue; he was receiving less and less support; a recent issue had lapsed because during an epidemic he had no time to spare for it, and in the latest issue he had himself written twenty of its thirty-two pages. Accordingly he resigned, and six months later the *Gazette* ceased publication.

Samuel Knaggs, a general practitioner in Newcastle, who had been closely associated with Milford in the *New South Wales Medical Gazette*, made the next

attempt in 1877 with a quarterly journal, the *Australian Practitioner*. However, this again failed to gain support, despite the fact that a copy of the first issue was sent to every practitioner in the Australian colonies, and it ceased after one year, leaving Knaggs out of pocket to the tune of about £100.

The Victorian journals were all launched in some measure in opposition to the *Australian Medical Journal*. The hand of the individualist is in most cases very much in evidence. The *Medical Record of Australia* appeared in May, 1861, as "A Journal of Australian, European and American Medicine, Surgery, Midwifery, Physiology, Medical Jurisprudence, Chemistry, Materia Medica and Pharmacy", and ceased in December, 1863, owing to the ill health of the editor. Gandevia states that the editor and proprietor, Dr. C. E. Reeves, and the colourful Dr. J. G. Beaney virtually wrote the whole of this journal, which received few contributions from the profession. Its editorial policy was mostly opposed to that of the *Australian Medical Journal*. It seems possible that not only ill health but other matters of personal and professional expediency persuaded Reeves that it was better to cease publication of the *Medical Record of Australia*. The *Melbourne Medical Record* survived from 1875 to 1877. Its editorship is unknown. It disliked the Medical Society of Victoria, the *Australian Medical Journal*, Dr. J. G. Beaney and various other people and institutions, and attacked them vigorously. The *Medical and Surgical Review* (*Australasian*) was launched by F. F. Baillière in 1863, as a "Bi-monthly Journal of Medical News, Literature and Criticism". It appears to have been vigorous, but publication ended after two and a half years, the stated reason being inability to obtain a suitable editor. The new series of the *Medical and Surgical Review*, which appeared in 1873 and continued for about two years, was concerned mainly with abstracts and reviews of overseas papers. It appears to have been a private venture. *The Australian Medical Gazette* appeared in 1869 as the official organ of the Medical Association of Victoria, a newly formed rival organization to the Medical Society of Victoria. Apparently it ceased publication about 1871, but the reason for cessation of publication, like that for the new series of the *Medical and Surgical Review*, is unknown.

The Twentieth Century.

At the turn of the century there were thus two medical journals in existence in Australia, both flourishing and both associated with a stable medical society — *The Australasian Medical Gazette* in New South Wales and the *Intercolonial Medical Journal of Australasia* in Victoria. The latter reverted to its original name of *Australian Medical Journal* in 1910, it being rightly but somewhat belatedly realized that the name was an anachronism; there had been no colonies in Australia since 1900. *The Australasian Medical Gazette* was the official organ of all Branches of the British Medical Association in Australia except the Victorian Branch. The *Australian Medical Journal* was the official organ of the Victorian Branch.

The only other Antipodean medical journal surviving at this time was across the Tasman Sea. *The New Zealand Medical Journal* had been founded by the New Zealand Medical Association in 1887, the first issue appearing in September of that year, not long after the first meeting of the Association as a national body in Dunedin. Later it became the journal of the New Zealand Branch of the British Medical Association and has flourished to this day.

For some years before the beginning of the century, a move had been afoot to establish an Australasian medical journal. Indeed, a resolution that it was desirable to found an Australasian medical journal had been adopted at the third session of the Intercolonial Medical Congress held in Sydney in 1892. Four years later, at the fourth session of the congress at Dunedin, the establishment of such a journal was again advocated. Nothing lasting came of the discussions that took place on this proposal, and the idea remained in abeyance until the formation of the Federal Committee of the British Medical Association in Australia in 1911. In May of that year the Federal Committee sent to the Branches for their consideration and their approval two motions:

> 1. That in the opinion of this committee the Branches of the British Medical Association should conjointly own and conduct one weekly paper.
>
> 2. That in the opinion of this committee machinery should be provided for the Branches to combine to purchase the interests of New South Wales and Victoria in the Australasian Medical Gazette and the Australian Medical Journal respectively to conduct a weekly paper.

There were, however, difficulties about joint ownership of a journal by the six individual Branches, and another way had to be found. After further negotiations the Australasian Medical Publishing Company Limited was formed with a membership representing each of the six Branches of the British Medical Association in Australia, a board of directors being elected by and from the members. Dr. Henry William Armit was brought from England to be manager of the company and editor of THE MEDICAL JOURNAL OF AUSTRALIA, the first issue of which was published by the Company on July 4, 1914. Its stated purpose was "to record the progress of scientific medicine, and to assist in rendering the practice of medicine in all its branches of the greatest benefit to the people of Australia". It was described on the cover of that first issue as the official organ of the British Medical Association in Australia and continued to be so described until the end of 1921, when for certain very cogent reasons the words were dropped from the cover. It is accepted today that the *British Medical Journal* is the official journal of the British Medical Association in Australia, as elsewhere throughout the world. However, the relations between THE MEDICAL JOURNAL OF AUSTRALIA and the six Australian Branches is close and based, I trust, on mutual confidence, which has been maintained through the years. It is understood that the policy of the Journal on medico-political matters coincides in general with that of the Federal Council. The working editorial policy of the Journal is that it exists to serve medicine and the whole medical profession in Australia.

The most notable feature of the development of Australian medical journalism in the twentieth century has been the rise of a series of specialist journals. The first of these, *The Australian Journal of Experimental Biology and Medical Science*, published by the University of Adelaide in association with the Medical Sciences Club of South Australia, came into existence in 1924. This journal is not concerned with the clinical aspects of medicine, confining itself firmly to the fields indicated by its title. It is still one of the most significant medical journals published in Australia and has an established overseas reputation. Originally a quarterly journal, it has been published six times a year since 1948.

In 1928, about three months after the first annual meeting of the College of Surgeons of Australasia, the first number appeared of a publication with the cumbersome title *The Journal of the College of Surgeons of Australasia, which includes New Zealand*, and it continued to appear three times a year until June, 1931, when the name was changed to *The Australian and New Zealand Journal of Surgery*. Just before this, it may be noted, the College had become the Royal Australasian College of Surgeons. *The Australian and New Zealand Journal of Surgery*, which is essentially a specialist surgical journal, is the official organ of the College. It is published quarterly and has a well-established reputation.

The next journal to appear was the privately published *General Practitioner of Australia and New Zealand*, which remained under the sole control of its editor, Dr. W. H. Fitchett, from 1930 until his death in 1950, when it was taken over by the private publishing house of Butterworth & Co. (Australia) Ltd. In its

earlier days this journal took an active interest in medical politics, but of recent years it has consisted essentially of article of the revisionary type designed to meet the needs of general practitioners; most of these articles are taken from overseas journals with acknowledgement.

Just before the beginning of the Second World War the Ophthalmological Society of Australia (B.M.A.) decided to publish its annual proceedings, and the first volume appeared as the *Transactions of the Ophthalmological Society of Australia* (*B.M.A.*) in 1939. Volumes II and III appeared in the two succeeding years, and then there was a gap until 1944 because of wartime conditions. This publication, although it appears only once a year, has established itself among world medical journals, because of the high standard of its contributions, and not least because it published Sir Norman Gregg's original epoch-making paper on the association of congenital defects with maternal rubella in 1941.

In 1945 the Post-Graduate Committee in Medicine in the University of Sydney, which had experienced a revival and great expansion of its activities in catering for medical practitioners who were returning to practice after service in the forces, established a *Bulletin*. This has appeared regularly each month since April, 1945, containing mostly lectures which have been given at post-graduate courses. It has also been the vehicle of publication of the Annual Post-Graduate Orations, which contain much valuable material bearing on the history of medicine in Australia.

The Royal Australasian College of Physicians began publishing its *Proceedings* in 1946, and these continued to appear each six months until the publication of the first number of *Australasian Annals of Medicine* in May, 1952. For the first two years *Australasian Annals of Medicine* was a half-yearly publication, but since 1954 it has appeared four times a year. It is the official organ of The Royal Australasian College of Physicians and publishes articles relating to all aspects of internal medicine.

Three new journals have commenced in the past 10 years: *The Australian Journal of Dermatology*, official organ of the Dermatological Association of Australia (B.M.A.), in 1951; *Annals of General Practice*, official organ of the Australian College of General Practitioners, in 1956; *The Journal of the College of Radiologists of Australasia*, official organ of that College, in 1957. Each is published twice a year.

From time to time a volume of clinical reports is published by the staff of various of the major hospitals, including Royal Prince Alfred Hospital in Sydney, the Royal Melbourne Hospital and the Alfred Hospital in Melbourne, and the Adelaide Children's Hospital.

The Present Position.

The present position in summary is that we have a weekly journal in Australia and a monthly journal in New Zealand designed to meet the general needs of the profession; a well-established journal limited to experimental biology and medical science; major journals of surgery and of internal medicine published quarterly by the two Royal Australasian Colleges; two general practitioner journals, one of them the official organ of the related College; specialist journals of dermatology, ophthalmology and radiology, each associated with the appropriate College or association; and a monthly bulletin publishing post-graduate lectures. The staffs of a number of hospitals find an additional outlet through hospital publications.

It is interesting to note at this point, if you will forgive a momentary digression, the part played by one man in the development of the present position. The late Dr. Mervyn Archdall, who was Editor of THE MEDICAL JOURNAL OF AUSTRALIA from 1930 to 1957, also edited the following journals from their inception: *The Australian and New Zealand Journal of Surgery* and its predecessor, *The Journal of the College of Surgeons of Australasia, which includes New Zealand*, from 1928 to 1949; *Transactions of the Ophthalmological Society of Australia* (*B.M.A.*) until his death; successively *The Proceedings of the Royal Australasian College of Physicians* and *Australasian Annals of Medicine* until his death. He was also consultant editor of the *Bulletin of the Post-Graduate Committee in Medicine, University of Sydney*, and had a guiding hand in the launching of at least two other journals. His influence on medical journalism in Australia in our time was far greater than that of anyone else.

The Future.

The question of where we go from here is the main concern of this conference. No conclusions that we reach this week will be necessarily binding on anyone, so we can express ourselves quite freely, but let us make the most of this opportunity for an honest exchange of viewpoints and a pooling of experience and ideas.

Medicine in Australia today is moving into a new era. Not only has it reached maturity, standing in its own right in the world, but it is expanding rapidly. In particular, we have the multiplication of medical schools, the great growth of research both in the basic medical sciences and especially in clinical medicine, the increase in number and size of specialist medical groups, the growing interest in post-graduate medical education and the opportunities now unfolding to help our neighbouring countries to the north in the medical education of their students, both undergraduate and post-graduate, and in the sending to those countries of teachers, examiners and consultants. All this means more medical publication, and it is vital that it should be of the most effective character.

I believe it to be of the greatest importance to the future status of Australian medicine that at least a substantial proportion of the best Australian work should be published in Australia. But this will be justified only if the existing and future medical Press in this country can present this work in a worthy manner, and can ensure that it reaches the world-wide readership which it seeks and warrants.

At the same time the Australian medical Press has an inescapable responsibility in relation to the continuing education of the medical profession in our own country, to the maintenance of the highest standards of medical practice, and to the contribution that the medical profession may be rightly expected to make to the national and social life of Australia. Ours is a dual role of service and leadership.

No existing journal, however set in its ways or however smugly entrenched it may be, should be allowed to continue on its way unmolested unless it shows evidence that it is willing to make its maximum contribution to the future of Australian medicine. No new journal should be allowed to be conceived and born unless it appears likely to make a worthwhile further contribution in the searching light of our present-day needs.

I trust that this conference will be a time of honest stocktaking and constructive planning that will ensure for the future an effective partnership, in mutual confidence and goodwill, between medicine and the medical Press of Australia.

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HOW THE DOCTOR LOOKS AT HIS JOURNALS.[1]

By DOUGLAS J. ANDERSON, M.D., B.S.,
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MY part in this Conference is to tell you how the practising doctor looks at his medical journals, what journals he reads, what he likes to read in them, what he does read in them and how far they satisfy him. In order to do this, I sent out a *questionnaire* to 80 doctors in New South Wales, all personally well known to me and representing, I should say, a pretty fair cross-section of the profession, both general practitioners and specialists. It was a rather long *questionnaire*, I am afraid—"a quite formidable examination paper for a mere pass student", as one of my friends put it—so that I considered myself fortunate to get 72 papers back, with 70 completed and two not completed for good reasons. All but two of the 70 doctors who completed the *questionnaire* signed their names to it, though I had put on the bottom "Signature optional".

My first question related to THE MEDICAL JOURNAL OF AUSTRALIA and was a repetition of a question which I put to 80 general practitioners five years ago. The replies (Table I) correspond very closely with those received in 1955. The most popular feature of THE MEDICAL JOURNAL OF AUSTRALIA is "Correspondence". The next is the leading article, which testifies, I think, to the great influence wielded within the profession by the Editor. The reports of clinico-pathological conferences are widely read, much more so than the reports of meetings. More doctors are reading the Federal Council news now than five years ago.

This, no doubt, indicates that the Council's wisdom or lack of it, and firmness of character or lack of it, are more capable now than ever before of affecting the doctor's way of life. It should be an indication to the Journal that the effort required to produce full and accurate reports is requited by the appreciation of readers, and an indication to the Council that it should be reluctant to withhold any part of its proceedings from publication. "Current Comment" retains its popularity with readers, so that doctors evidently find it helpful, despite its somewhat solid typography, in keeping them abreast of current medical thought.

There has been a sharp increase in the proportion of readers who never read the book reviews. The reviewing of books is one of the most valuable services which the Journal performs for its readers, to that this may possibly have something to do with the changed layout of the reviews. Perhaps the caption no longer catches the eye. Fewer readers look at the abstracts from current literature than was the case a few years ago. I take it that this is because many of the abstracts are too long, and because those who prepare them, young specialists for the most part, I understand, tend to abstract material that is not of general interest.

The advertisements, too, seem to be less widely read than a few years ago, although the drift is not great. I gained the impression that the younger doctors pay much closer attention to the advertising pages than do their elders. I asked one question, not with special reference to THE MEDICAL JOURNAL OF AUSTRALIA: "Have you any objection to advertising pages being interleaved with the text pages of medical journals?" Thirty doctors did object and 39 did not; but some of the objectors were quite vehement about it and made marginal comments. Of course, the advertising managers will laugh them to scorn, because they get more revenue from advertisements facing text pages. If they translate the results of this inquiry of mine into £.s.d., they will see that advertisements are interleaved with the editorial and correspondence pages, and the publishers will sell the space at a considerable premium, until a deputation of irate doctors marches on The Printing House with well-oiled guns.

That the Journal plays an important part in keeping doctors professionally up to date was demonstrated by the answers to my second question: "Do you file THE MEDICAL JOURNAL OF AUSTRALIA for reference?" About one-third of the doctors answered "Yes" to this question, and many others stated that they tear out helpful articles and file those for reference, but not the whole Journal.

TABLE I.
How 70 Doctors Read "The Medical Journal of Australia".

	Usually.	Occasionally.	Seldom or Never.
Cover to cover	5	20	45
Original articles	30	38	2
Book reviews	17	33	20
Leading articles	40	26	4
Current comments	32	33	5
Abstracts	20	30	20
Clinico-pathological conferences	27	26	17
Reports of meetings ..	15	29	26
Federal Council news ..	22	30	18
Correspondence	44	21	5
Obituaries	30	21	19
Advertisements	17	17	36

My third question about THE MEDICAL JOURNAL OF AUSTRALIA was: "Would you like to see in the Journal any kind of matter which does not now appear?" Twenty-one of the 70 doctors had suggestions to make under this heading. Six demanded more articles on the modern treatment of common illness, and four wanted reviews of new drugs or articles on prescribing. Four asked for a "Questions and Answers" department. Two asked for a light-hearted feature along the lines of "In England Now", which appears weekly in *The Lancet*, and two wanted more material under the heading "On the Periphery." Of these, one made special mention of Professor Osborne's delightful article on "What Made the Clock Tick?" and the subsequent correspondence. Among other demands were requests for articles on medical practice in other countries, reviews of recent advances in particular branches of medicine, more medical news, "medico-philosophical" material and more controversy. One doctor, evidently partial to a gladiatorial fray, strongly objected to the editorial brackets saying "This correspondence is now closed".

The demand for a review of new drugs is now being met by the new magazine, *New Ethicals*, published by Permindex Proprietary Limited, of Artarmon, New South Wales, which commenced publication in July, 1960. This magazine was sent to all doctors in Australia and New Guinea with a card to be filled in and returned by those who wished to receive future issues. I am told that over 3800 of the cards were returned. The editor of *New Ethicals*, Mr. Ronald Colman, is a pharmacist, not a doctor. Though much information about new drugs is given in the magazine, there is no criticism or refutation of manufacturers' claims—or has not been so far.

My fourth question relating to THE MEDICAL JOURNAL OF AUSTRALIA was the opposite of the third question, and was: "Do you think that any substantial proportion of the original material printed in the Journal would be more suitably accommodated in other publications?" This question was prompted by some of the replies to my *questionnaire* of five years ago, to the effect that articles embodying medical research, especially in the basic sciences, epidemiology and statistics, should be stringently selected, drastically pruned and carefully summarized. No less than 30 of the 70 doctors thought that unsuitable material is appearing in the Journal and the bugbears are much the same as those five years ago. They would exclude articles: (*a*) embodying research in anatomy, physiology, biochemistry and pharmacology; (*b*) embodying medical research; (*c*) describing experimental medicine and surgery; (*d*) on epidemiology and statistics; (*e*) based on presidential addresses; (*f*) on medical history; (*g*) of other kinds (specified).

[1] Read at a Conference on Medical Journalism held in Sydney on October 26, 1960. It is also published in the *Bulletin of the Post-Graduate Committee in Medicine, University of Sydney*, February, 1961.

I come now to the *British Medical Journal*. Five years ago I discovered that the *British Medical Journal* was read by fewer doctors than THE MEDICAL JOURNAL OF AUSTRALIA, and that those who turned its pages found in them less of interest than they found in THE MEDICAL JOURNAL OF AUSTRALIA. This is one of those things that might be described as strange but true. I therefore thought it appropriate to ask, and this was my fifth question: "Do you think that you would continue to subscribe to the *British Medical Journal* if the subscription should no longer be covered by your subscription to an Australian medical association?" Of the 70 doctors who replied, 35 said that they would continue to take in the *British Medical Journal* and 35 said that they would not. It would appear, therefore, to be of doubtful propriety to continue to collect a subscription to the *British Medical Journal* from each member of each State medical association in Australia, since only about one-half of the members want it. It might be better to collect a subscription from each member wanting to subscribe in the same manner as subscriptions to the World Medical Association are collected.

Within the last few years, leaving aside periodicals which have died soon after birth, there have appeared two new medical periodicals of great interest. I refer to *Modern Medicine of Australia* and *Stethoscope*, both of which are commercial ventures, deriving revenue from advertisements and distributed free of charge to doctors throughout Australia. These periodicals have introduced new methods to medical journalism and publishing in Australia.

Modern Medicine of Australia is published in Sydney by Modern Medicine of Australia Proprietary Limited, a company incorporated in New South Wales in 1957 with a nominal capital of £2000, of which £102 has been paid up. The shareholders are Nelson McKendry Seccombe, publisher, of 65 Douglas Drive, Toronto, Ontario—1 share; Roger Howard Tallam, solicitor, of 20 Morella Road, Clifton Gardens, N.S.W.—1 share; and Modern Medicine of Great Britain Limited, of 3 Lincoln's Inn Fields, London—100 shares. The directors are N. M. Seccombe, of Canadian nationality, just mentioned; and Jay Herz, company president, of United States nationality, of 20 North Wacker Drive, Chicago, Illinois. Almost the whole of the literary matter appearing in *Modern Medicine of Australia* is abstracted from overseas medical journals—there is no copyright in an abstract—and there are a number of comments by Australian specialists, contributed by invitation, but I understand not paid for. A remarkable and rather puzzling feature is a list, which appears in the opening pages of every issue, setting out the names of numerous Australian medical men, some of them quite well known, who are stated to constitute an honorary editorial board.

The sixth question in my *questionnaire* asked how *Modern Medicine of Australia* is read. Of the 70 doctors replying, 15 read it all or nearly all, 43 glanced through it, and 12 did not read it at all. Fourteen of the 70 filed it for reference. Nineteen thought it an organ of the lay Press, as that term is defined in the by-laws of the New South Wales Branch of the British Medical Association, 26 did not, and 25 were undecided. The by-law defines the lay Press as including (in addition to newspapers other than medical newspapers) trade journals and periodicals, and other publications of manufacturing or distributing firms, and of associations of persons other than medical men.

Stethoscope is published in Sydney by Stethoscope Limited, a company incorporated in England in 1959 with a capital of £100. It was registered in New South Wales in 1960. The directors, all of British nationality, are Hugh McLeave, journalist, of Holland Park, London; Edward Robert Cyril Edyvean, managing director, of Esher, Surrey; Victor Morris Bond, company secretary, of Hornchurch, Essex; Carl Norman, sales director, of Welwyn Garden City, Hertfordshire; and Richard Mackarness, medical practitioner, of Richmond, Surrey. Dr. Mackarness graduated in 1944 and was formerly medical correspondent of the *News-Chronicle*. He is the author of a book entitled "Eat Fat and Grow Slim". There are no local directors in New South Wales. One of the objects of the company is stated to be to hold or promote competitions of any description.

The seventh question in my *questionnaire* asked how *Stethoscope* is read. Of the 70 doctors replying, 7 read it all or nearly all, 41 glanced through it, and 22 did not read it at all. In reply to a question: "Do you welcome the appearance of a new and independent monitor of medical news and opinion?", 31 said "Yes", 28 said "No", and 11 did not answer. Of those who welcomed the appearance of *Stethoscope*, one commented that it was "a refreshing, interesting publication"; another that it had done well to bring into the open contentious matters which are generally obscured, such as the prophylaxis of tetanus; another deplored the crudity of the printing; another said that the early editions had an unpleasing tone. Of those who did not welcome *Stethoscope*, one denied that it was a monitor, one said that it was "a rag", another that it was cheeky, another that it strove too much for sensation, another that it was too much like popular journalism, another that it "smelt" of popular journalism, while another feared that it might give out misguided and dangerous publicity.

The next questions and the answers received were as follows: "Do you think that any or all of the following are out of place in a medical journal?" (i) Features intended for doctors' wives: Yes—50; No—18; (ii) Prize competitions: Yes—48; No—20; (iii) Light reading: Yes—29; No—39. Evidently the majority of doctors like a bit of light reading in their medical journals, but frown upon its falling into the hands of their wives. Twenty-three doctors thought that *Stethoscope* was an organ of the lay Press, 12 thought not, and 35 were undecided. In summary, the medical profession has been friendly disposed toward *Stethoscope*, notwithstanding that many doctors have been irritated by its irreverent attitude to the profession's "sacred cows", and despite its very amateurish printing and often vulgar tone.

I did not inquire about *The General Practitioner of Australia and New Zealand* on this occasion, because many of the *questionnaires* were going to doctors in specialist practice. This magazine is published in Sydney by Butterworth and Company (Australia) Limited, a company incorporated in England, which specializes in the publication of professional books and magazines. None of the directors is a medical practitioner. The chairman is the Earl of Rothes, and there is one local director, W. B. Nichols, of Longueville, New South Wales. The editor is Dr. James Woolnough, of Epping, whose appointment was made fairly recently. The literary matter in those issues which I have seen has consisted of articles of special interest to general practitioners, mostly republished from overseas medical journals. That the selection is generally thought to be a good one is witnessed by the laudatory comments which I received five years ago. The annual subscription is £2 17s. 6d. and the circulation is about 1500 copies. It is of interest that only three doctors replying to the *questionnaire* thought the *General Practitioner* to be an organ of the lay Press, while 24 thought otherwise, and 43 either did not know the magazine or were undecided (Table II).

The definition of "lay Press" in the by-laws of the New South Wales Branch of the British Medical Association, is in my opinion a very unsound one, in that it stigmatizes and holds up to professional ostracism any medical periodical circulating only amongst the profession if it should be published by an association of persons other than medical men. The by-law is stultified by the general acceptance of many reputable medical journals brought out by lay publishing houses.

Another question in my *questionnaire* concerned the British Medical Association's publication *Family Doctor*. Only 22 of the 70 doctors replying had seen *Family Doctor*, and there was only one subscriber—a busy general practitioner in a large country town.

Recipients of the *questionnaire* were asked to state whether they received any journal paid for out of the

subscription to a medical society other than the British Medical Association. Thirty-three out of the 70 doctors received 38 such journals. Eight received *Annals of General Practice*, eight *Australasian Annals of Medicine*, and five *The Bulletin of the Post-Graduate Committee in Medicine, University of Sydney*. A further question asked whether the recipients thought that the cost of the journal to the society was justified by the value of the articles published. Twenty-eight of the doctors answered "Yes", two answered "No" (both in respect of *Australasian Annals of Medicine*), and there were three doubtful.

TABLE II.

Lay Press.

According to your interpretation of By-law 10 of the N.S.W. Branch of the B.M.A., are the following publications or any of them organs of the lay Press?

—	Yes.	No.	Not Known.
The General Practitioner	3	24	43
Modern Medicine	19	26	25
Stethoscope	23	12	35

A further question was: "Do you subscribe to any other medical journal(s)? If so, which?" Twenty-seven doctors subscribed to 31 journals. Of these, *The Lancet* was the most popular with 10 subscriptions, *The Bulletin of the Post-Graduate Committee* had five, *The Quarterly Journal of Medicine* and *The General Practitioner* had four each, *The Practitioner*, *The British Journal of Surgery*, *The Overseas Post-Graduate Medical Journal* and *Medical Clinics of North America* had three each, and there were twenty-two other journals with 24 subscriptions between them. Five years ago, 77 general practitioners had 129 subscriptions to 41 journals. In the present inquiry, 70 doctors have 100 subscriptions to 69 journals. The two series are not strictly comparable, but such comparison as is possible suggests that doctors may be reading less now than five years ago.

Since two of those who replied to my *questionnaire* commented that the advent of television had left them with less time now for reading, I sent out a second *questionnaire* to find out how television may have affected professional reading. I sent it to 80 metropolitan doctors, mostly not known to me, whose names appeared in two columns selected at random from the classified pages of the Sydney Telephone Directory. I received 75 replies, 71 of which gave useful information. All were unsigned (signatures were not asked for). Of the 71 doctors, 29 were general practitioners, 29 were specialists and 13 were in mixed practice. Forty-six had television in their homes and 25 had not, and all those having television watched it themselves in leisure time. Twenty-eight of these doctors said that the advent of television had not materially reduced the amount of time which they devoted to professional reading; but 18 said that it had—10 by less than half and eight by more than half. No doctor had entirely given up professional reading because of television. One doctor said that, even though he rarely watched it himself, the television set made so much noise in the house that his serious reading was interfered with. Two doctors said that they no longer had television in their homes because it interfered too much with professional reading. Five doctors stated that they now spent less time watching television than when the set was new, and consequently devoted more time to reading (Table III).

Of the 29 general practitioners, 19 had television in their homes and 10 did not; and of the 19 only three admitted that the time devoted to reading was materially reduced by television. Of the 29 full-time specialists, 18 had television in their homes and 11 did not; of the 18, seven admitted that the time devoted to reading was materially reduced. Of the 13 in mixed practice, nine had television in their homes and four did not; of the nine, eight admitted that the time devoted to reading was materially reduced—in four cases by more than half. These figures seem to me very remarkable—but as my commission is a fact-finding one and not a speculative one, I shall not attempt to interpret their significance.

At the end of my main *questionnaire* I left a space for any remarks which the recipients might care to make. A great many doctors filled the space, and I shall quote some of their remarks without comment. "I do not feel that the lay publication of medical journals should be encouraged or supported." "THE MEDICAL JOURNAL OF AUSTRALIA is of very little value to salaried officers." "I get wild when the illustration pages of THE M. J. OF A. fall out on to the floor, which they usually do: Why can't they staple them in?" "All original articles should have to conclude with a summary." "More lectures given in Refresher Weeks should appear in the *P.-G. Bulletin*, even if this should mean doubling its capacity and charging more for it." "We ought to get more humour and articles like those in May and Baker's *Medical Bulletin*." Last, but not least, came a cry from the heart of one poor fellow whose presbyopia seems to be catching up with him: "My problem is that reading now puts me to sleep!"

TABLE III.

Television.

Has the advent of television materially reduced the amount of time which you devote to professional reading?

—	General Practitioner.	Mixed.	Specialist.	Total.
No	16	1	11	28
Yes, but by less than half	1	4	5	10
Yes, by more than half	2	4	2	8
Given up reading journals	0	0	0	0
Total	19	9	18	46
No television set ..	10	4	11	25
Grand total ..	29	13	29	71

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PRIMARY ALDOSTERONISM (CONN'S SYNDROME): REPORT OF A CASE, AND AN ANALYSIS OF PUBLISHED CASES.

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AND

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THE syndrome of primary aldosteronism has attracted much interest since it was first described by Conn (1955). Although uncommon, it is not excessively rare. Although Louis and Conn stated (1958) that they knew of over 100 cases, many of these have not been reported, and our search of the literature to the end of 1959 has revealed only 71 cases, some of which are mentioned very briefly.

The purpose of this paper is to analyse certain features of the published cases, and to report a new case (the second from this unit) in which the disease presented

in a rather unusual way. Details of balance studies, including the effect of an aldosterone antagonist and an anomalous diuretic effect of anti-diuretic hormone, are described elsewhere (Simpson and Barnett, 1960).

Report of a Case.

Mrs. A., a housewife, aged 37 years, was admitted to the Alfred Hospital in August, 1958. She had become irritable soon after her first pregnancy, which occurred at the age of 26 years, and her blood pressure was found to be raised. She had also had some hirsuties of the face since that time. During her second pregnancy, which occurred at the age of 30 years, her blood pressure was again found to be moderately raised; two months after delivery she was troubled by headaches and her hypertension increased in severity. Lumbo-dorsal sympathectomy was performed and this gave her relief from the headaches. A third pregnancy, at the age of 35 years, was terminated at 37 weeks on account of hypertension. About six weeks after this third delivery the patient suffered from weakness in her limbs, which lasted for three weeks. She subsequently experienced minor episodes of weakness, mainly in her hands. There was no tetany. She had been accustomed to drinking about 12 cups of tea daily for four or five years, and she usually had nocturia. She had noticed slight ankle swelling in hot weather for about two years, and had suffered from some minor attacks of nocturnal dyspnœa shortly before her admission to hospital. She had not had diarrhœa. Her menstruation was regular, with a rather heavy loss.

On examination, the patient was tall and thin, with rather long arms, a high arched palate and marked myopia; these features are rather suggestive of Marfan's syndrome, but arachnodactyly was absent. Her blood pressure was usually about 240/130-140 mm. of mercury. The ocular fundi showed minor arteriosclerotic changes. There was no œdema or other evidence of heart failure but the heart was moderately enlarged, with minor systolic and diastolic murmurs discernible in the aortic valve area. Radiographic examination of the chest revealed left ventricular enlargement and an unusual shadow above and lateral to the aortic arch, shown by aortography to be part of a dilated and tortuous aorta. The Wassermann test gave a negative result; the blood urea level was 35 mg. per 100 ml.; the urine was alkaline in reaction, and contained a small amount of albumin, but no sugar; the urine specific gravity varied from 1004 to 1022; the urinary pressor amine levels were not raised.

The history of the episode of weakness was not obtained at the initial interview, and Conn's syndrome was not suspected, although, in retrospect, the electrocardiograph showed well marked *U* waves—sufficient to suggest hypokalæmia (Figure I). The patient was treated with reserpine (0·25 mg. thrice daily) and chlorothiazide (0·5 gramme twice daily) with a resulting fall in blood pressure to an average value of 170/100 mm. of mercury, and was discharged from hospital. She then developed general stiffness, soreness and weakness, particularly in her leg muscles, and she was unable to open her hands properly. On her return to the clinic, the following plasma-electrolyte levels were determined: sodium 146 mEq/l.; potassium 1·9 mEq/l.; chloride 83 mEq/l.; bicarbonate 44 mEq/l. Two grammes of potassium chloride per day were given but the plasma potassium fell further, to a level of 1·7 mEq/l. Chlorothiazide was withheld, and mecamylamine was administered.

The patient was readmitted to hospital in March, 1959. Her blood pressure fluctuated between 170/100 and 210/120 mm. of mercury, while she was treated with reserpine and mecamylamine. On her admission the urine was neutral in reaction and contained no albumin or sugar. The specific gravity during the patient's stay in hospital varied between 1004 and 1020; one isolated reading was obtained of 1030. The effect of an injection of vasopressin was observed, and this not only failed to produce inhibition of diuresis, but it actually caused an increased diuresis (Simpson and Barnett, 1960).

The effect of variation of the potassium intake on the excretion of potassium in the urine was observed. When the patient had a normal potassium intake (84 mEq/day) the urinary potassium level was 63 mEq/24 hours; when she had a low potassium intake (25 mEq/day) it was 69 mEq/24 hours, with a plasma-potassium level of 2·9 to 2·6 mEq/l. The continued excretion of large amounts of potassium in spite of a low serum potassium level and restricted potassium intake was considered very significant. The urine-aldosterone level was 50 μg/24 hours, the upper limit of normal for the method used being 20 μg/24 hours.

Radiographic examination of the suprarenal areas by combined intravenous pyelography and retroperitoneal (presacral) air insufflation revealed a normal right adrenal gland and a tumour about 3 cm. in diameter arising from the left adrenal gland (Figure II).

The patient was discharged from hospital at her own request. Her hypotensive treatment was continued and potassium chloride (40 mEq/day) was prescribed. She was readmitted on June 4, when her serum-electrolyte levels

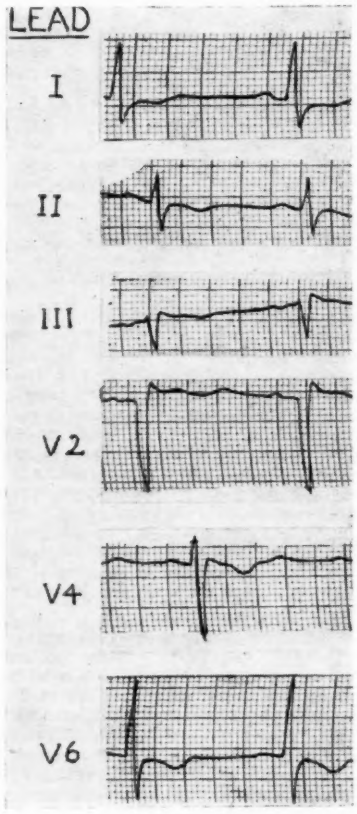

FIGURE I.

Electrocardiograms taken during the first admission to hospital, showing features of hypokalæmia.

were as follows: sodium 150 mEq/l.; potassium 2·5 mEq/l.; chloride 95 mEq/l.; bicarbonate 37 mEq/l.; protein 17 mEq/l. The urine was acid in reaction, and free of albumin and sugar. During her stay in hospital she was obliged to rest, the hypotensive therapy was continued and she was given a diet containing 55 to 75 mEq. of potassium per day. The potassium chloride supplement of 40 mEq/day was continued for most of the time, although there were short periods of increased and decreased potassium intake. The serum potassium level rose steadily and the levels of the other serum electrolytes returned to normal, the values on June 28 being as follows: sodium 145 mEq/l.; potassium 4·6 mEq/l.; chloride 102 mEq/l.; bicarbonate 29 mEq/l.; protein 16 mEq/l. (Simpson and Barnett, 1960).

On June 29 the left suprarenal area was explored and the tumour, which had been demonstrated radiographically, was excised. It was a benign adrenocortical adenoma measuring 3 cm. in diameter. It was bright yellow on section, with a histological structure similar to that of the zona fasciculata.

After the operation the hypotensive drugs were withdrawn. The patient's blood pressure fell to normal levels and remained there for about a week, and then started to climb again. The levels of the plasma electrolytes remained

normal without a further potassium supplement being given. Two months after the operation the blood pressure had risen to about 200/100-120 mm. of mercury, and the patient was again given reserpine and chlorothiazide; this gave good blood-pressure control, but no undue depression of the serum-potassium level, which has remained above 3·8 mEq/l.

FIGURE II.

Radiograph of left renal and suprarenal areas after air insufflation, showing a tumour immediately above the upper pole of the kidney.

Review of Published Cases.

The main features of Conn's syndrome (primary hyperaldosteronism) are hypertension, episodic muscular weakness or paralysis, polyuria and hypokalæmic alkalosis, resulting from excessive function of the suprarenal cortex. In Conn's original case, and in most of the cases published subsequently, this syndrome was associated with a benign adrenocortical adenoma. Such cases may be labelled Conn's disease. We have found descriptions of 38 such cases in which the diagnosis seems reasonably certain, and the age, sex, and some clinical details are given. Cases with inadequate information have been excluded. Another 16 cases have been found with clinical features similar to those of Conn's disease, but with no adrenal adenoma. Of these 16 patients, 10 had adrenal hyperplasia, three had normal adrenals and three had an adrenocortical carcinoma. The 54 cases forming the basis of this review are listed in Table I. We have excluded cases of aldosteronism in which marked œdema occurred, those associated with Cushing's syndrome and those associated with neoplasms in other parts of the body.

We have used these cases to obtain a composite picture of the pathology, clinical features and useful tests in Conn's syndrome. The incidence of the main features discussed is shown in Table II.

Pathology.

A benign adrenocortical adenoma was found in 38 cases (Conn's disease), in three of which (Cases 5, 25 and 34) more than one adenoma was present. The tumours were all small; sometimes the contour of the gland was scarcely affected (Case 24); the largest measured 6 cm. in diameter (Case 2). They were described as orange, golden yellow or various other shades of yellow, and sometimes showed areas of hæmorrhage. Usually the tissue resembled zona fasciculata, occasionally with parts resembling zona glomerulosa. One patient (Case 19) had an atrophic kidney in addition to an adrenal adenoma.

Three patients (Cases 52, 53 and 54) had a carcinoma of the adrenal cortex. In one of these (Case 53), the history was long, suggesting a malignant change in a preexisting adenoma.

TABLE I.

List of Cases of Aldosteronism forming Basis of Review.

Group.	Case Number.	Author.	Year.
A. Patients with benign adrenocortical adenoma.	1	Barrett *et alii.*	1958
	2	Bartter and Biglieri (Case 2).	1958
	3	Bobek *et alii.*	1958
	4	Brooks *et alii* (Case 2).	1957
	5	Bruhl.	1958
	6	Campbell *et alii.*	1956
	7	Chalmers *et alii.*	1956
	8	Conn.	1955
	9	Crane *et alii.*	1956
	10	Crane *et alii.*	1958
	11	Eales and Linder.	1956
	12	Fine *et alii.*	1957
	13	Garlington and Bailey (Case 1).	1958
	14	Garlington and Bailey (Case 2).	1958
	15	Hellem.	1956
	16	Hewlett *et alii* (Case 1).	1957
	17	Hewlett *et alii* (Case 2).	1957
	18	Hewlett *et alii* (Case 3).	1957
	19	Hoet.	1958
	20	Hudson *et alii.*	1957
	21	Lieberman *et alii.*	1958
	22	Mader and Iseri.	1955
	23	Milne *et alii* (Case 1).	1957
	24	Milne *et alii* (Case 2).	1957
	25	Mucio *et alii.*	1957
	26	Nassim and Jory.	1958
	27	Ortuzar *et alii.*	1958
	28	Russell *et alii.*	1957
	29	Salassa *et alii.*	1958
	30	Siguier *et alii.*	1958
	31	Simpson and Barnett.	1960
	32	Skanse *et alii.*	1957
	33	Sorce and Whitstone.	1958
	34	Thorne *et alii.*	1957
	35	Weaver *et alii* (Case 1).	1959
	36	Weaver *et alii* (Case 2).	1959
	37	Weaver *et alii* (Case 3).	1959
	38	Weaver *et alii* (Case 4).	1959
B. Patients without benign adrenocortical adenoma.	39	Alsted and Halberg.	1958
	40	Bartter and Biglieri.	1958
	41	Van Buchem *et alii.*	1956
	42	Eales and Linder.	1959
	43	Ellison and Mamwi.	1958
	44	Fitzgerald *et alii.*	1957
	45	Hilton *et alii.*	1959
	46	Holten and Peterson.	1956
	47	Kistler *et alii.*	1959
	48	Kretschmer *et alii.*	1957
	49	Maisterrena *et alii.*	1957
	50	Therian *et alii.*	1959
	51	Wyngaarden *et alii.*	1954
	52	Bleha *et alii.*	1957
	53	Brooks *et alii* (Case 1).	1957
	54	Foye and Feichtmeir.	1955

Thirteen patients (Cases 39 to 51) had no discrete adrenocortical tumour: of these 10 had hyperplasia of the adrenal glands and three had adrenal glands which were described as normal. In one case (42) an ovarian cystadenoma was also present and in another (Case 39) pituitary basophilia.

Conn noted in his original case (8) that the zona fasciculata of the gland was atrophic. This has been reported in other cases (7 and 22); in two cases (23 and 24) atrophy of the zona glomerulosa was reported, and in five cases (1, 9, 10, 16 and 19) no atrophy of the cortex was found.

Age and Sex Incidence.

Age.—The ages of the patients at diagnosis and their estimated ages at the time of onset of symptoms are shown in Table III. The onset of symptoms in patients with benign adenoma usually occurred in early or middle adult life, whereas the patients with normal or hyperplastic adrenals were often young, six of the 13 being children or adolescents.

Sex.—Of the 38 patients with benign adenomas 29 were females and 9 were males—that is, a female:male ratio existed of over 3:1. On the other hand, eight of the 13 patients with normal or hyperplastic adrenals were males.

TABLE II.

Incidence of Symptoms and Signs in Published Cases of Conn's Syndrome.

Feature.	Adrenal Lesion.	Noted Present.	Noted Absent.
Weakness	Adenomas	27	3
	Others	5	6
Polyuria	Adenomas	25	4
	Others	11	1
Diarrhœa	Adenomas	6	0
Hypertension	(All cases)	54	0
Retinopathy, grades III and IV.	Adenomas	3	—
	Others	7	—
Albuminuria	Adenomas	23	6
	Others	10	3
Low urinary specific gravity (<1016 after water deprivation).	Adenomas	23	4
	Others	10	2
Diabetes or diabetic glucose tolerance curve.	(All cases)	7	5
Trousseau's or Chvostek's sign		7	6
Electrocardiograph typical of hypokalæmia.		23	8

Clinical Features.

The history in many cases of benign tumours was very long—up to 25 years (Case 16)—but the initial feature was sometimes merely an incidental finding of a raised blood pressure. There was usually a gradual increase in the severity of symptoms and a stepwise addition of fresh symptoms. In our case there was a deterioration after each of the three pregnancies. Unfortunately the obstetric history is deficient in most of the published cases, but in two (6 and 11) the onset of, or aggravation of, the symptoms followed delivery.

The adults without adenomas tended to have short histories. However, in some of the adolescents, there was a history (usually of polyuria) dating back to early childhood.

The main symptoms were weakness, paralysis, polyuria, thirst and headaches (Table II). Weakness was more common in cases with adenoma (being present in 27 of 30 cases in which reference is made to this symptom) than in the other groups of cases, in which it is referred to in only five instances.

Polyuria was present in practically all cases in both groups.

Headache was a common symptom, and in some cases it preceded weakness or polyuria by several years.

Diarrhœa, usually periodic, was recorded in six cases of benign adenomas, but was not referred to in the other groups.

The blood pressure was raised in all cases, this feature being an essential part of the syndrome, but it was often labile. It was only moderately raised in most of the cases of benign adenomas (the diastolic level being below 130 mm. of mercury in two-thirds of the cases), but was often greatly raised in the cases of normal or hyperplastic adrenal glands (the diastolic level being above 130 mm. of mercury in two-thirds of the cases). The effect of removal of an adrenal cortical adenoma on the blood pressure was variable. Of the patients whose histories are available, three remained hypertensive, four had a transient fall in blood pressure only, three had a fall in blood pressure but were still mildly hypertensive and 10 had a return to normal blood pressure which had persisted until the time of reporting.

Retinopathy of grade III or IV was recorded in only three of the patients with adenomas. (In one, Case 19, there was also an atrophic kidney, in another, Case 27, papillœdema was observed during a pregnancy.) On the other hand, severe retinopathy was observed in seven of the patients with hyperplastic or normal adrenal glands, this being the group with higher blood-pressure levels.

Disturbance of renal function was common. Thus, albuminuria was present in 23 out of 29 cases of adenoma, and in eight out of 10 cases with hyperplastic or normal adrenal glands. It tended to be more marked in the latter group. The reaction of the urine in nearly all cases was alkaline, neutral or only faintly acid; only two patients (Cases 9 and 10) showed consistently acid urine.

The urine specific gravity was measured after a period of water deprivation in 27 cases of adenomas and was low (1016 or below) in 21 cases. It was above 1020 in only two cases, both of which were atypical: one patient (Case 9) had acid urine, and the other (Case 12) had been treated with a low-sodium diet for years because of rheumatic heart disease. The urinary specific gravity after water deprivation was also low in 10 of 12 cases without adenoma.

Other renal function tests of various types usually showed some impairment of function, and in some cases further deterioration followed the removal of an adenoma. Only one patient (Case 3) showed improvement in the early post-operative period, but delayed improvement occurred in others.

Glycosuria or diabetic glucose tolerance curves were exhibited in seven cases; normal curves were reported in five cases. The diabetic state was lessened after operation in one patient (Case 17) and glucose tolerance reverted to normal in two (Cases 16 and 41).

Tetany or latent tetany was present in some patients; Trousseau's or Chvostek's sign was present in seven of 13 cases.

Electrocardiograms are described in 41 cases. In 33 there was evidence of hypokalæmia; in the other eight, there were apparently *T*-wave abnormalities only, or evidence of left ventricular hypertrophy.

The plasma potassium levels were always low, but values up to 3·5 mEq/l. were found at times in individual cases, with even higher values during treatment with potassium supplements. The plasma-potassium levels did not differ between patients with adenomas and those

TABLE III.

Age and Sex Incidence in Published Cases of Conn's Syndrome.

Adrenal Lesion.	Stage.	Age (Years).				Sex.		Total.
		0–10	20–39	40–59	60 and Over.	Male.	Female.	
Adenoma	Diagnosis	1	15	10	3	9	29	38
	Onset of symptoms	2	22	7	1			
Hyperplasia and normal	Diagnosis	6	1	6	0	8	5	13
	Onset of symptoms	6	5	1	—			
Carcinoma	Diagnosis	0	0	2	1	2	1	3
	Onset of symptoms	0	1	2	0			

with normal or hyperplastic adrenal glands. The plasma-sodium levels were high or at the upper level of normal in nearly all cases, the exceptions (Cases 42, 44, 46 and 51) occurring among the patients with normal or hyperplastic adrenals. The plasma chloride levels were not consistently altered. The plasma bicarbonate levels were usually high.

Special Tests.

Steroid Excretion.—The most direct evidence of the presence of an aldosterone-secreting tumour is the demonstration of an increased excretion of aldosterone in the urine. The estimation is difficult, and the techniques used have varied and their comparison is unsatisfactory. High outputs of aldosterone have been demonstrated in a total of 29 patients with Conn's syndrome, although in some of these the values were at times normal. In four cases (1, 4, 28 and 34) the urine aldosterone was found to be normal. In one patient (Case 2) the aldosterone output was independent of the sodium intake, while in others the aldosterone output was influenced by various control mechanisms; it was increased by a high potassium intake (Case 1) or by the administration of ACTH and vasopressin (Case 30) and diminished by a low-potassium diet, a high-sodium diet or 9 α-fluorohydrocortisone (Case 30) (Baulieu *et alii*, 1959).

The excretion of other adrenal steroids was usually normal. An increased output of 17-kestosteroids has been reported in three patients with adenomas (Cases 4, 14 and 20) and in two patients with malignant tumours (Cases 53 and 54), and an increased output of 17-hydroxysteroid has been reported in one patient with adrenocortical hyperplasia (Case 50).

Salivary Sodium/Potassium Ratio.—Because of the difficulty of estimating aldosterone, a simple screening test would be of great help and it has been hoped that this might be provided by the salivary sodium/potassium ratio. In the 12 cases tested, it was low in eight and the results were inconclusive in four. It is therefore not a reliable screening test for aldosteronism.

Response to Vasopressin.—Eighteen patients from both groups were given injections of vasopressin. In all cases there was a failure to respond with an increase in urinary specific gravity, or only a very slight response. In our present case a reverse response occurred, in that the urine flow increased after the injection (Simpson and Barnett, 1960).

ACTH or cortisone had an anomalous effect on some patients; a sodium diuresis occurred in six cases (4, 8, 10, 11, 22 and 32) sometimes after a short period of sodium retention, while potassium retention occurred in one (15) and increased creatine clearance in one (Case 2).

Muscle biopsy was performed in seven cases (7, 8, 13, 24, 25, 41 and 44). The muscle-sodium content was increased and the potassium content decreased in all cases.

Discussion.

Diagnosis.

The diagnosis in the present case was missed initially on account of a too-low "index of suspicion". The patient had not been specifically asked whether she had ever experienced attacks of weakness, and sufficient attention was not paid to the suggestive *U* waves of the first electrocardiogram. In addition, by a mischance, her plasma-electrolyte levels were not estimated before she began taking chlorothiazide.[1]

The diagnosis of primary aldosteronism is not always easy, and it seems likely that cases are being missed. There are probably mild cases (such as that of Milne *et alii*, 1957, Case 24) in whom diagnosis must inevitably be difficult, but nearly all the remainder of the published cases have shown comparatively gross features. A history of weakness was one of the most constant features, and polydipsia and polyuria (especially nocturnal polyuria) was also very frequent. These features in a hypertensive patient, particularly if they are associated with a low urinary specific gravity, an alkaline urine and an electrocardiogram suggestive of hypokalæmia, should prompt further investigation. The most helpful simple test, apart from the estimation of the plasma electrolytes, was the response to antidiuretic hormone (vasopressin); in 16 out of 18 cases the urinary specific gravity failed to rise; in the remaining two cases there was a very slight response only.

When the presence of hypokalæmia has been established, extrarenal loss of potassium has to be excluded. The presence of diarrhœa cannot be taken as a satisfactory explanation of potassium loss, as it was present in six of the cases listed in Table I, and in two more mentioned in the literature (Wightman, 1957). However, in hypokalæmia arising from constant diarrhœa (for example, through misuse of purgatives), urinary potassium loss is very small (Schwartz and Relman, 1953).

Differentiation from potassium-losing nephritis may be difficult, and even in the presence of a normal aldosterone output, considerable renal impairment, and no evidence of an adrenal tumour on radiological examination, an aldosterone-producing tumour can be excluded with certainty only by direct inspection of the suprarenal glands.

Ætiology.

The present analysis has demonstrated a number of differences between cases of benign adrenocortical adenomas and those of normal or hyperplastic adrenal glands.

Among patients with benign adrenocortical tumours there is a great preponderance of women of middle and late child-bearing age. A possible explanation is that female sex hormones in some way stimulate the adrenal cortex to form aldosterone-producing adenomas; in fact, adrenocortical hyperplasia and adrenocortical tumours have been produced in hamsters (Franks and Chesterman, 1956) and guinea-pigs (Chesterman *et alii*, 1956) by implantations of stilbœstrol. Again, the endocrine changes of menstruation, pregnancy and lactation may possibly precipitate symptoms in patients with aldosterone-producing tumours, so that cases in females are easier to diagnose.

Among patients with normal or hyperplastic adrenal glands there is a preponderance of males and a high proportion of children or adolescents; blood pressures are higher and severe retinopathy is more common; muscle weakness is less common, and the plasma sodium level may be low. The adrenocortical hyperplasia and increased excretion of aldosterone may, in some of these cases, be secondary to the malignant hypertension or to a sodium-losing renal condition (Fitzgerald *et alii*, 1957; Eales and Linder, 1959).

The question of the incidence of adrenocortical adenomas and adrenal hyperplasia in hypertension is a somewhat vexed one. It is well established that adenomas are more commonly found at necropsy in hypertensive patients than in patients with normal blood pressures (Rinehart *et alii*, 1941; Dawson, 1956) and also that nodular hyperplasia of the adrenal cortex is much more common in patients with essential, compared with renal, hypertension (Dawson, 1956). The relationship of such adenomas or hyperplasia to hypertension and to aldosteronism is still uncertain, and it does not follow that an adrenal abnormality in a given patient with hypertension or electrolyte disturbance is necessarily the cause of these conditions. The role of aldosterone in essential hypertension has not yet been clarified.

Summary.

1. A case of primary aldosteronism due to an adrenocortical adenoma (Conn's disease) is described. The diagnosis was first suspected when hypokalæmia and severe weakness occurred during treatment with chlorothiazide.

[1] See addendum.

2. This case, and 53 previously published cases, are used for a reveiw of primary aldosteronism (Conn's syndrome). Thirty-eight patients had an adrenocortical adenoma, three had an adrenocortical carcinoma and 13 had adrenocortical hyperplasia or normal adrenal glands.

3. A marked preponderance of women of middle and late child-bearing age was found among the patients with an adrenocortical adenoma.

4. The group of patients with normal or hyperplastic adrenals differed from those with an adrenocortical adenoma in several respects, including age, sex, level of blood pressure, severity of retinal damage, symptomatology and in some cases the level of plasma sodium.

5. Diagnostic measures and some ætiological aspects are discussed.

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Addenda.

1. Since this paper was written a detailed review of cases published before July, 1958, has appeared (Delorme and Genest, 1959).

2. It is possible that chlorothiazide was instrumental in aggravating the electrolyte disturbance and so helping to unmask the condition. Since this paper has been written it has been shown that hydroflumethide, a substance with a similar action to chlorothiazide, produces increased loss of potassium in the presence of increased secretion of aldosterone (Edmonds and Wilson, 1960).

RECENT EXPERIENCES IN THE RECOGNITION AND TREATMENT OF TEMPORAL LOBE EPILEPSY WITH SPECIAL REFERENCE TO SURGERY.

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OVERSEAS literature is replete with accounts of temporal lobe epilepsy and this important cerebral dysrhythmia has been twice the subject of an international colloquium, the last being held in Bethesda, Maryland, in 1957.

To my knowledge very little has been written on the Australian scene and it is with diffidence that I proffer this contribution in an attempt to indicate its incidence, the methods used in recognition and the treatment, both by drug therapy and by surgical procedures. It is my intention in this paper to discuss our experiences of temporal lobe ablation, drawing on a small series of 11 patients operated on at the Royal North Shore Hospital by Mr. John Grant.

The subject matter will be dealt with under four headings. Firstly, an introductory review of a small personal series of patients suffering from temporal lobe epilepsy will be presented. Secondly, a brief illustrated reference to diagnostic procedures will be made. Thirdly, reference will be made to the selection of patients for operation, and finally mention will be made of the surgical approach; here I will indicate briefly the protocols of the patients submitted to temporal lobe ablation, giving illustrations of electrocorticograms obtained during operation. Some reference will be made to the results and the complications of surgery.

The surgery employed for temporal lobe epilepsy in Sydney, to the best of my knowledge, has been confined to block excision of the anterior 5 or 6 cm. of the temporal lobe, which excision may be extended to include the mesial structures. I am aware that newer techniques have been tried, the long-term results of which are awaited with interest. I refer to trans-ventricular amygdalahippocampectomy and to pallido-amygdalotomy by stereotactic approach. At the Royal North Shore Hospital, anterior temporal lobectomy has been the only method of surgical attack and with this, monitoring by electrocorticography.

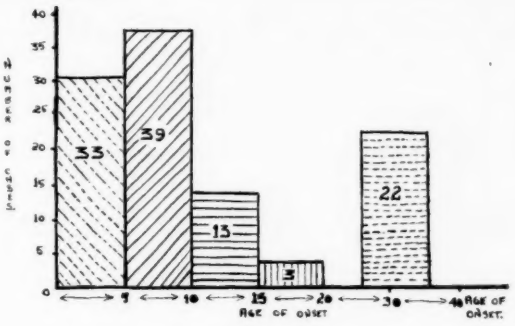

FIGURE I.

Graph showing the age of onset of temporal lobe epilepsy, indicating the two main divisions.

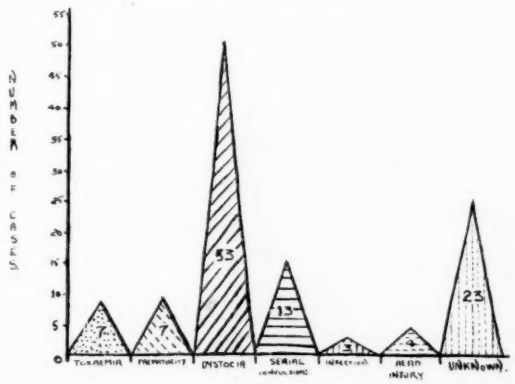

FIGURE II.

Graph representing the factors considered contributory in the pathogenesis of temporal lobe epilepsy.

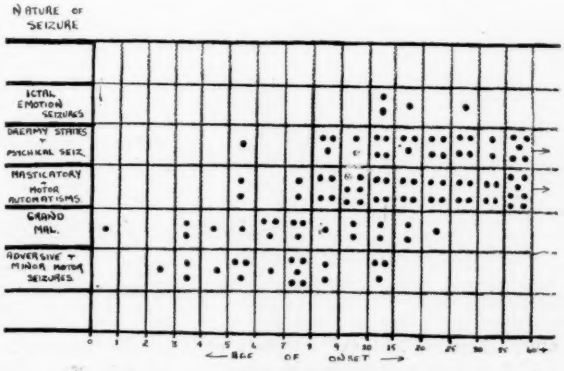

FIGURE III.

Scattergraph indicating the predominant seizure pattern in the author's personal series.

As an introduction may I present briefly an analysis of a small personal series collated over the last three years. From a total of 456 epileptics of all types (excluding

febrile convulsions), 110 patients were chosen as satisfying the clinical and electroencephalographic criteria of temporal lobe epilepsy—that is, a total of 31%. Here it might be interesting to quote the dictum of Professor Meyer: "From the large uncharted pool of idiopathic epilepsy there has emerged a numerically important group (probably 30%) distinguished by clinical, by electrographic and by pathological evidence (which amongst that 72 out of 110 patients presented with their initial seizure in the first decade of life—it is this group probably that will show Ammon's horn sclerosis. Those in the 8-15 years age group may have diffuse changes with or without Ammon's horn sclerosis. Figure II illustrates a breakdown of the relevant contributory factors in the history of these children.

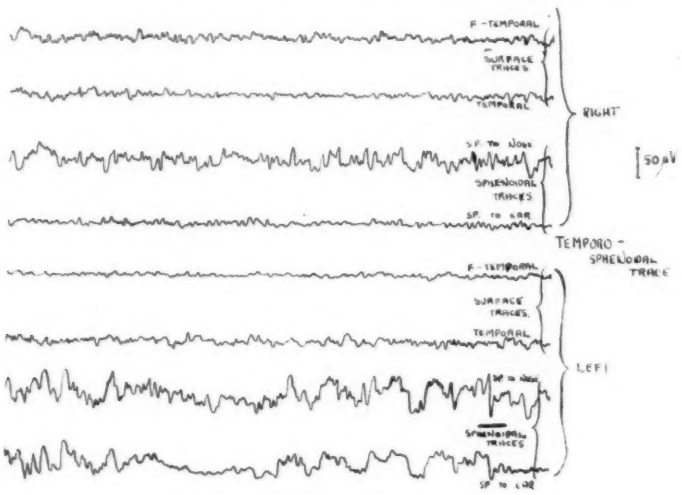

FIGURE IV.

Basal emplacement electroencephalogram obtained with temporo-sphenoidal needles.

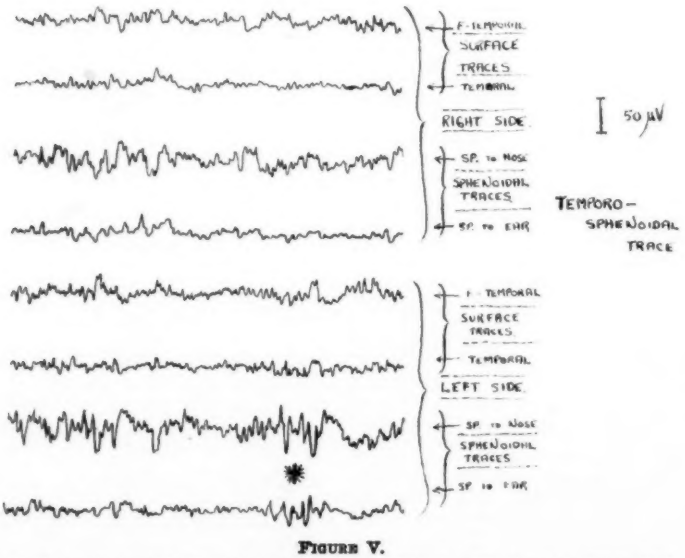

FIGURE V.

Basal emplacement electroencephalogram obtained with temporo-sphenoidal needles.

other changes, includes sclerosis of Ammon's Horn, the Uncus and the Amygdaloid complex) of temporal lobe involvement." My own percentage correlates closely with this.

In my own limited experience I have found that there are two major divisions of the disease with regard to the age of onset—seizures of early onset and seizures of late onset. Figure I illustrates this. It will be seen

It has been recently stated by Jeras of Yugoslavia that, in his experience, generalized epileptic attacks (major and minor motor or tonic seizures) are the most common manifestations of temporal lobe epilepsy up to the age of eight years, and that after this the typical psychomotor attacks are more commonly observed (automatisms, dreamy states, psychical seizures, ictal emotions, disorders of affect, etc.). I compiled my own scattergraph (Figure III), which illustrates well Jeras's statement.

Finally in this review one must mention the disorders of affect so commonly seen in the younger age group of temporal lobe epileptics. I refer to the aggressiveness, the so-called ixophrenic personality and the disordered and episodic behaviour patterns that are part and parcel of the syndrome, either as inter-ictal or ictal manifestations. This enormous aspect, which can be mentioned only, is the subject of a recent paper by myself. In the present series 37% of the children in the first decade of life manifested disorders of affect.

It would take me far beyond the confines of my paper to discuss or to summarize the literature on the pathogenesis of the rhinencephalic lesions in psychomotor epilepsy. It would seem well accepted now that the seizure discharges originate perhaps primarily in the uncus and amygdala, perhaps less frequently in Ammon's horn and, in a certain percentage of cases, in the neocortex of the temporal lobe. Electrographic involvement manifestations of psychomotor epilepsy (automatisms, masticatory seizures, psychical seizures of Penfield, dreamy states, etc.) need no elaboration. Surface electroencephalography has been responsible for the recognition of temporal lobe dysrhythmias and still remains the important step in diagnosis.

If surgery is contemplated, then a more specific attempt at lateralization of the spike or spike-wave discharge or other focal electrographic abnormality is indicated. It has been found that the best results have been obtained by the use of the basal emplacement technique as described by Pampiglioni and Kerridge. Temporo-sphenoidal needle electrodes are inserted and recordings obtained from the basal and mesial temporal cortex. I have found that the following routine has been the most successful.

A preliminary surface recording is first obtained. Anæsthesia is then induced with 150 to 300 mg. of "Pentothal". The needles are inserted and then a continuous recording

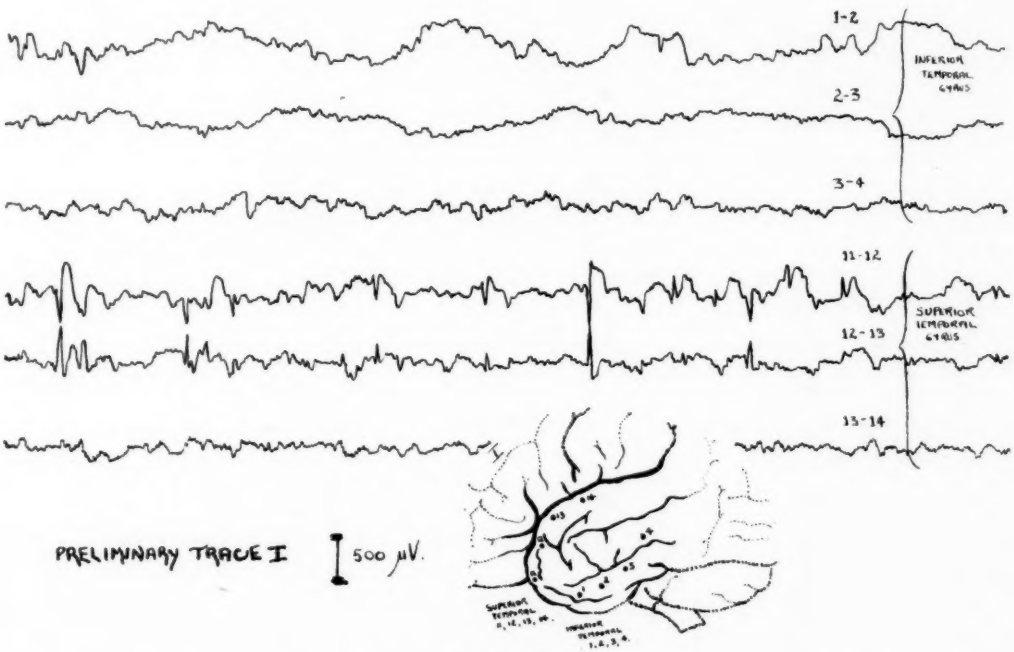

FIGURE VI.
Electrocorticogram taken as a pre-excision recording from the patient A.

of the insula and the opercular cortex of the frontal lobe has been demonstrated in some cases. The suggested origins of such epileptogenic lesions include the following: (i) incisural ischæmia and sclerosis; (ii) serial convulsions and status epilepticus of infancy and childhood; (iii) trauma, which Couville discussed adequately at Bethesda, highlighting in his paper the fact that damage is rarely done to the mesial structures in cranio-cerebral trauma. The damage, received either directly or by *contre coup*, is confined mainly to the dorso-lateral and basal cortex. (iv) Small focal lesions may be the cause. Glial hamartomas and microscopic gliomas may, in a small percentage of cases, prove epileptogenic. This is well discussed by Falconer in a recent paper.

Diagnosis.

The diagnosis must, of course, be both clinical and electrographic. Grand mal epilepsy and minor motor or tonic seizures in the first decade of life must be regarded with suspicion, and all children who have fits deserve electroencephalographic investigation. The more florid is made from the surface and from the basal emplacement electrodes. This is continued with increments of 100 mg. of "Pentothal" at two to three-minute intervals, to a total of 600 to 750 mg.

Figures IV and V are electroencephalograms taken from patients undergoing this investigation. Clear spike potentials may be seen from the needle electrodes. Reduction of the "Pentothal" rhythms on the side of the unilateral focus is considered to be of value in the placing of the lesion (Kennedy and Hill, 1958).

After the satisfactory establishment of a unilateral spike focus, pneumoencephalography is carried out, and in this procedure one looks for distortion or dilatation of the temporal horn.

Selection of Patients for Operation.

Three criteria were used in the selection of the patients for this procedure. Firstly, failed medical control (frequent psychomotor seizures uncontrolled by adequate anti-convulsant medication) was considered a suitable criterion. Secondly, non-ictal psychiatric disorders or

severe personality disturbances enabled the patients to qualify. Falconer lists the personality disturbances thus: aggressive behaviour; paranoid, aggressive personality; inadequate, ineffectual personality; hysterical personality; other types — depressed, schizoid and psychosexual. It must be stressed that such personality disturbances, *per se*, have not been used by us as sole indications for operation, but, being common concomitants of temporal lobe epilepsy, they may be used in the final assessment of the patient for operation. Thirdly, we admitted patients with a unilateral electrographic focus. As stated above, serial surface electroencephalographic recordings and basal emplacement recordings are important. Bilaterality of spike and spike-wave potentials has not deterred some surgeons, but all aim to operate on the patient with a strictly unilateral focus or with discharges of higher voltage in one hemisphere. It has been shown that a mirror or subsidiary focus may disappear after unilateral surgery.

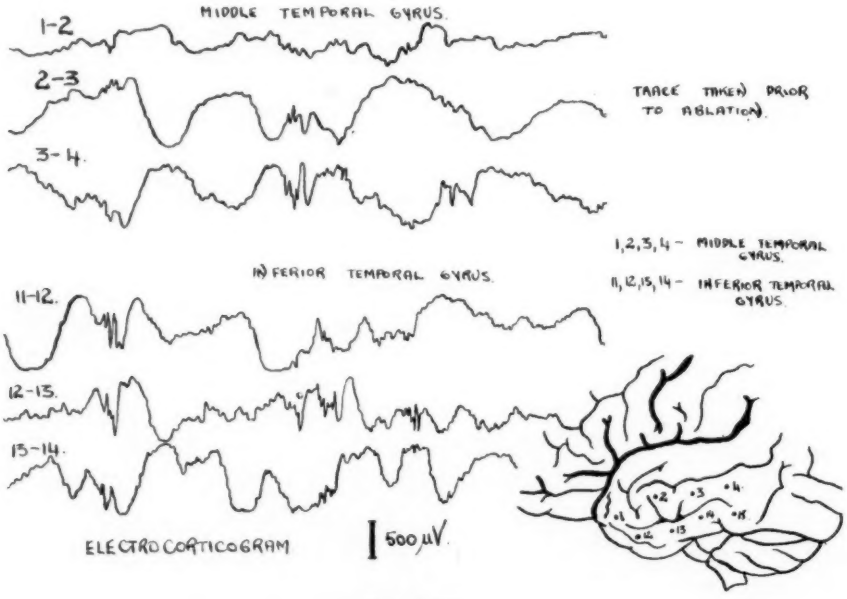

FIGURE VII.
Electrocorticogram taken during operation from the patient B.

Depth recordings from the amygdala and hippocampus have not as yet been attempted by us. Ajmone-Marsan and Buren, in a very interesting paper, discuss the use of depth recordings from chronically implanted electrodes in an endeavour to lateralize discharges in difficult cases.

The following extracts from the case histories of 11 patients submitted to temporal lobe ablation will indicate some of the main facets of the history and operative procedures and will indicate some of the common sequelæ of operation.

A., a male, aged 17 years, had suffered from all forms of psychomotor epilepsy, running the gamut from status epilepticus to bizarre hallucinatory states, adversive seizures and automatisms. He was never controlled by anticonvulsants, and, after accurate localization, was subjected to left temporal lobectomy. Figure VI demonstrates the high voltage cortical spikes recorded from the surface of the exposed brain during craniotomy. He has had one seizure only in the 18 months since his operation (and this occurred early in the post-operative period) and has graduated from being a mulish, retarded boy with uncontrollable seizures to a young citizen who has now taken his place in the world with full earning capacity. A transitory aphasia and right hemiparesis were his immediate post-operative sequelæ, but these disappeared before his discharge from hospital.

B., a male, aged 27 years, had been a chronic epileptic since early neonatal days; the main features of his disorder were automatisms and masticatory seizures with a rare grand mal. Anticonvulsants had no effect, and ablation of the left temporal lobe, including the uncus and hippocampus, was carried out. Figures VII and VIII show the electrocorticograms of the patient. In his post-operative course he exhibited some of the facets of the so-called Kluver-Bucy syndrome; he developed an acute psychotic episode and had an excessive gain in weight. When he was examined recently, his mental status was found to be equivalent to the pre-operative level of a somewhat dull young man. The frequency of his seizures has been reduced to less than 30% of the previous level.

C., a female, aged 14 years, was a chronic epileptic, the illness dating from dystocia with brain damage. She was subjected to right temporal lobectomy, after which post-operative confusion and extreme negativism lasted for some eight weeks. She has had further seizures, but they have been reduced both in frequency and intensity.

D., a female, aged 24 years, had suffered from epilepsy since the age of 16 years, including both grand mal and psychomotor seizures. Her birth history was not known. Serial electroencephalograms showed high-voltage spike potentials over the right temporal lobe. A basal emplacement electroencephalogram confirmed the unilaterality of the spike discharges. Temporal lobe ablation was carried out, with monitoring by electrocorticography. Three weeks after operation no spike discharges were observed in a surface recording, and, since the operation 12 months ago, there has been a marked improvement both in her personality defect and in her seizure frequency. A recent follow-up showed a reduction of more than 50% in her seizures, compared with almost daily seizures prior to hospital admission and operation.

E., a male, aged 39 years, was a poorly-controlled epileptic from childhood. His seizure history was that of frequently occurring psychomotor seizures, adversive fits, automatisms and many grand mal episodes. A disorder of personality was well in evidence and he had been unemployable for several years prior to the operation. Episodes of depression had occasioned his admission to Broughton Hall. Serial electroencephalograms revealed the presence of an epileptogenic focus in the right temporal lobe. A basal emplacement

electroencephalogram confirmed the unilaterality of the spike focus and a pneumoencephalogram showed a dilated right temporal horn. Temporal lobectomy, including the uncus and hippocampus, was followed by a transient right abducens palsy. Electrocorticograms taken during the surgical procedures displayed high voltage spike discharges from the superior and middle temporal gyri. An electrocorticogram taken immediately after operation contained no spikes. Six months after operation the patient remains free of seizures but no great improvement in his personality status has been observed.

G., a female, aged 37 years, suffered from chronic temporal lobe epilepsy of many years' standing, with a curious inadequate and paranoid personality disorder. She was described by her relatives as being an inveterate liar and thief. Investigation revealed a persistent focus in the left temporal lobe, the anterior 6 cm. of which was excised at operation. Figure IX shows an electrocorticogram taken during the operation. Since the operation the patient has been free from seizures and her only post-operative sequela is a right upper quadrantopsia. Her behaviour patterns have been remarkably and pleasingly improved.

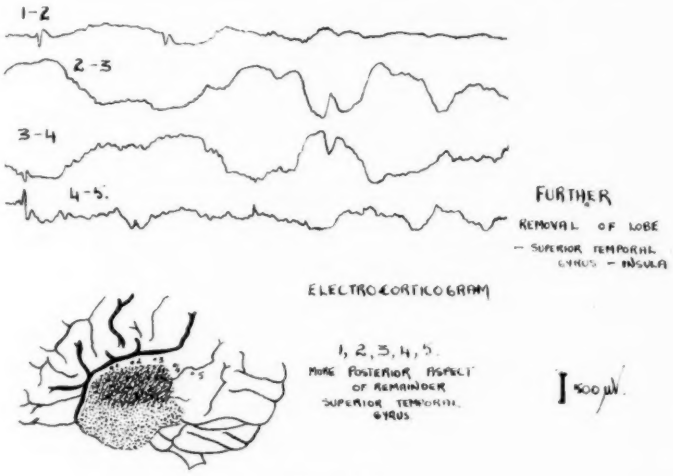

FIGURE VIII.
Electrocorticogram taken after operation from the patient B.

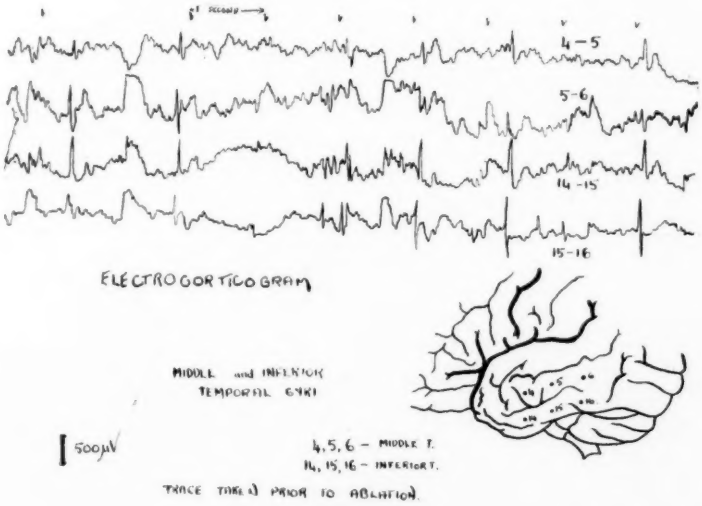

FIGURE IX.
Electrocorticogram taken before ablation from the patient G.

F., a female, aged 20 years, had always been a difficult child, exhibiting violent aggressive behaviour disorder episodes and a constellation of seizures ranging from grand mal to psychical seizures. Drug therapy failed to control her epilepsy and a right temporal lobectomy, including the mesial structures, was carried out. After the operation, she was admitted to a rehabilitation centre where she displayed some hypersexuality with childish, silly and amorous behaviour. This gradually improved as did the general pattern of her pre-operative disordered personality. She has been free from seizures.

H., a female, aged 23 years, suffered birth trauma, which was followed by intractable epilepsy originating in early childhood. Associated with this was some slight mental retardation and a mild but definite motor weakness in the right limbs. Serial electroencephalograms, including a basal emplacement recording, revealed a high-voltage spike-wave discharge from the left temporal lobe, and a pneumoencephalogram revealed a marked dilatation of the temporal horn. Left temporal lobectomy was performed without post-operative sequelæ. Figures X and XI show a pre-operative

and a post-operative electrocorticogram. She has had no seizures in the six months since the operation.

J., a female, aged 23 years, had had chronic epilepsy since suppurative mastoiditis at the age of 15 years, with many and varied seizures unrelieved by medication. Many of these included adversive fits and automatisms. Surface and basal emplacement electroencephalograms confirmed the presence of a right temporal lobe focus, with some transmission of the discharges to the opposite cortex. A pneumoencephalogram revealed temporal horn dilatation. At craniotomy, Right temporal lobectomy with electrocorticographic monitoring was carried out successfully, and his post-operative sequela is a partial right third-nerve palsy. There have been no further seizures in the three months since his operation.

L., a female, aged 37 years, had been an epileptic since the age of 5 years. It was stated that she sustained a severe head injury at the age of three years. Apart from her many and varied seizures and her frequent attacks of status epilepticus, she has manifested a marked disorder

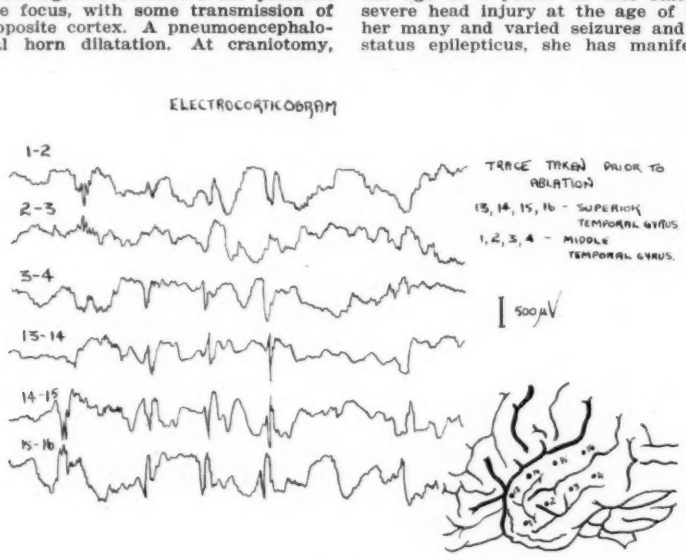

FIGURE X.
Electrocorticogram taken before ablation from the patient H.

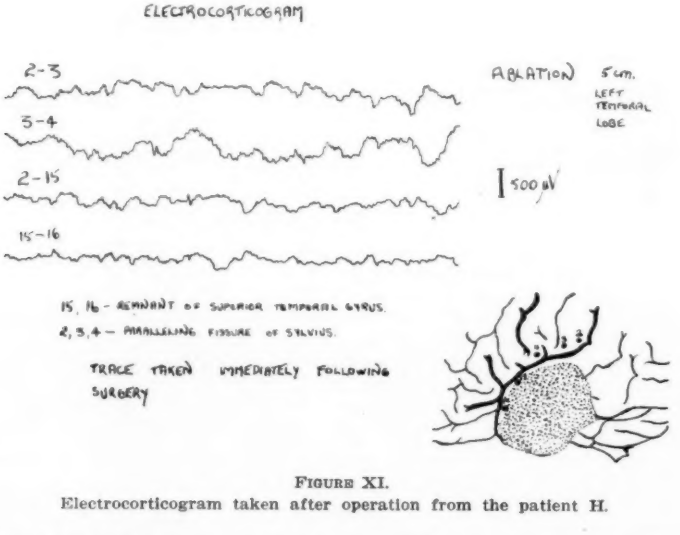

FIGURE XI.
Electrocorticogram taken after operation from the patient H.

high-voltage (750 microvolts) spike potentials were observed from the cortex of the middle and inferior temporal gyri. After classical excision of the anterior 5 cm. of the temporal lobe and the mesial structures no further spike potentials were observed. The patient's recovery was uneventful and no further seizures have occurred.

K., a male, aged 37 years, had been an epileptic for 15 years, with classical automatisms and adversive seizures to the left. He had a normal personality despite very frequent seizures, averaging 20 per month. Serial electroencephalograms and a basal emplacement recording confirmed the presence of an active right temporal lobe focus. of personality with aggressiveness and almost schizoid behaviour. Routine electroencephalographic investigation indicated a strictly unilateral focus. At craniotomy extraordinarily high-voltage cortical spike potentials (1200 to 1500 microvolts) were recorded from the middle and inferior temporal gyri. After ablation spike potentials were still seen actively discharging from the insular cortex, but no further removal of tissue was done, as it was decided that these might represent activation by operative procedures. Her immediate post-operative course was uneventful, but a sufficient history of the follow-up period is not available for adequate assessment.

Pathology.

Various specimens of excised temporal lobes have been submitted for histological examination. In a personal communication the pathologist states that the most striking histological feature was the finding of diffuse gliosis in the central white matter, with a mild pallor of the myelin in preparations stained for myelin. The walls of the blood vessels in the temporal white matter were also generally thickened. A patchy nerve-cell loss in the cortex with a mild subpial gliosis was also present in the specimens examined.

Interestingly one specimen—from the patient J. (an example of late-onset epilepsy)—revealed a small vascular hamartoma in the cortex at the base of the superior temporal sulcus. Satisfactory sections of the hippocampus or amygdaloid nucleus could not be made in every case. These mesial structures are with difficulty preserved, as they usually disappear down the sucker. However, sclerosis of the mesial structures was well demonstrated in six specimens.

A small point in the technique of the anæsthesia is worthy of mention. To obtain maximal spiking during the electrocorticographic recordings, "Pentothal" has been briefly substituted for the gas and oxygen used. With the anæsthetist's cooperation, the change-over from gas to "Pentothal" is carried out some 10 to 15 minutes before the anticipated electrocorticogram is taken. The "Pentothal" is considered to activate the spike discharges. Normal anæsthetic procedures are resumed after the tracings have been obtained. It may be argued that the operation can be carried out as an empirical procedure without electrocorticographic monitoring, but we are of the opinion that continuous recordings, both pre-operative and post-operative, are of considerable value. While not developing into "spike chasers", we have been guided in the further removal of tissue by the presence of active spikes. However, we are aware that the operative handling of tissue in itself may not uncommonly produce activation and spike discharges. In all cases operative encroachment above the superior temporal gyrus, and, posteriorly, behind the six-centimetre line, has not been attempted. In no case was the insular cortex removed.

In all cases anticonvulsant medication has been continued in the post-operative period. It is possible that as the post-operative picture unfolds, anticonvulsants may be discontinued. In every patient the level of medication has been less than the required pre-operative dosage.

Finally it has been stated by all authorities that best results are obtained with the operative removal of a unilateral focus. Figures variously quoted claim that 30% to 50% of patients are free of seizures after operation. Of the 11 patients operated on in this small series, six (A., F., G., H., J. and K.) have been rendered seizure-free for periods of six to 18 months. Four (B., C., D. and E.) have shown a reduction of seizure-frequency of from 30% to 50% and one has been seizure-free for one month.

Acknowledgement.

I acknowledge, with gratitude, the assistance of Dr. Brian Turner, neuropathologist to the Department of Mental Hygiene, New South Wales, who has kindly carried out the histological studies of the resected specimens, and I am indebted to him for his reports.

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Addendum.

Since this article was completed, a further five patients have been submitted to temporal lobectomy.

M., a male, aged 10 years, suffered from intractable epilepsy and a violent episodic behaviour disorder. After right temporal lobe ablation his seizures have been reduced from daily episodes to one only in four months. His behaviour patterns have greatly improved.

N., A youth of 16 years with a typical story and findings, submitted to right temporal lobe ablation and has been seizure-free for three months.

O., a female, aged 43 years, had temporal lobe epilepsy of late onset, the first seizures occurring at the age of 39 years. Histological examination of the resected temporal lobe revealed a vascular hamartoma.

P., a male, aged 18 years, was a chronic epileptic of many years' standing. At operation macroscopic atrophy of the superior temporal gyrus was observed and a formal ablation of the anterior 5 cm. of the lobe was carried out. Both O. and P. have been seizure-free for six months after operation.

Q., a youth of 17 years with uncontrollable seizures, recently submitted to right temporal lobe ablation, has made an uneventful recovery. Sufficient time has not elapsed to estimate the results of the operation but a post-operative electroencephalogram showed complete abolition of the pre-operative high-voltage spike activity.

Reports of Cases.

RETINOPATHY FOLLOWING CHLOROQUINE THERAPY.

By C. J. WALTER, D.O.,
Newcastle, N.S.W.

A MALE SCHOOL-TEACHER, aged 55 years, has suffered from lupus erythematosus since 1925. Between 1925 and 1949 he had been treated with X rays, some 232 injections of bismuth and 10 injections of "Solganol B". In February, 1950, he was given another course of gold injections. In April, 1952, he was given mepacrine (0·1 gramme) three times a day for a period of three months. In November, 1952, and January and February, 1953, mepacrine was again taken. In October, November and December, 1954, he was given chloroquine in a dosage of 250 mg. three times a day, and again from May, 1955, to January, 1956, he was given chloroquine in a dosage of 250 mg. per day. From March to August, 1956, he was given mepacrine, 0·1 gramme three times a day, and in December, 1957, and January and February, 1958, he took "Camoquin", one tablet of 250 mg. twice a day; then in October, November and December, he took chloroquine one tablet of 250 mg. per day; and from March to July, 1959, he took chloroquine, 250 mg. twice a day.

Ocular examination on April 2, 1957, at the age of 52 years, showed that visual acuity in both eyes was 6/6; with correction of a small degree of compound hypermetropic astigmatism and with a presbyopic addition he read Jaeger 1 type. The media were clear, and although the retinal vessels were slightly narrowed, the other features of the fundi were normal. The central and peripheral fields were within normal limits.

On August 21, 1959, the patient returned, complaining that he was having some difficulty with his reading and

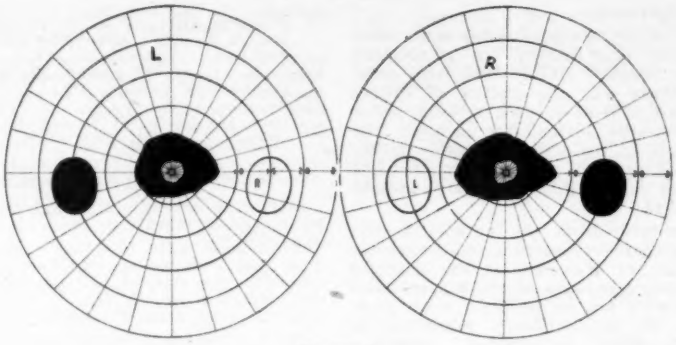

FIGURE I.

that this was more noticeable when he was reading large print. He also stated that it was difficult to count the number of a show of hands by the pupils in his classroom. Night vision was difficult. External examination showed clear corneæ. Refraction was not altered for distant vision, but he required a slightly stronger reading addition to give visual of acuity of 6/6 in both eyes and ability to read Jaeger I type. On attempting to read very large print, he did so by scanning. Internal examination showed clear media; the retinal vessels were narrowed, and there was an aggregation of fine pigment surrounding both maculæ. The peripheral visual fields were normal, but there was an absolute paracentral ring scotoma in each visual field (see Figure I).

Over the past twelve months this patient has not taken any chloroquine, but prednisolone has been substituted for treatment of his skin condition. There has been no relief of his visual symptoms, and the scotoma remains constant and absolute.

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AURICULAR FIBRILLATION ASSOCIATED WITH PROLONGED HIGH DOSAGE OF A NITROFURAN. "ALTAFUR" (FURALTADONE.)

By M. A. ROBINSON, M.B., B.S.,
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THE nitrofurans are potent bactericidal agents against certain bacterial species, notably staphylococci, streptococci and the coliform bacilli. Total induced resistance is unknown, and there is no record of cross-resistance with other antibiotics.

Clinically, "Altafur" (furaltadone) has proved effective in soft tissue infections and in those of the respiratory tract. It has been less effective against urinary tract infections. Studies of the effects of "Altafur" on pyruvate metabolism indicate that it inhibits carbohydrate metabolism of the bacterial cell at an early stage in the Krebs cycle. Reports of its toxicity in man include three questionable cases of neutropenia and two of drug rashes; the commonest side effects are nausea and vomiting. The recommended dosage is 1 gramme daily in four divided doses for the average adult.

"Altafur" was fed to dogs at the human adult equivalent dosage of 4·2 grammes per kilogram of body weight per day. Signs of toxicity fairly constantly followed the pattern: anorexia, polyuria and weakness followed by prostration, dyspnœa, pulmonary râles and death.

In at least one-third of the dogs which died, the heart was in intense systole and pulmonary congestion was most pronounced. Hæmosiderin deposits in the spleen and megaloblastic changes in the bone marrow were seen in all cases.

The present paper reports four cases which provide some evidence that "Altafur" in high dosage may be followed by the onset of auricular fibrillation.

Case I.

Clinical Record.

A slaughterman, aged 43 years, was knocked from his motor-cycle by a passing vehicle on May 16, 1960. He sustained a fracture through the left acetabulum of the pelvis with central hip dislocation and a fracture-dislocation of the left ankle. His previous health had been good and there were no symptoms or signs of cardio-vascular disease. The blood pressure was 130/90 mm. of mercury.

The Pott's fracture was treated by closed reduction and plaster immobilization, but the pelvic destruction was too great to be reduced by closed methods. Open reduction was attempted, and the wound became infected by a coagulase-positive staphylococcus shown to be resistant to penicillin *in vitro*. Various antibiotics were exhibited, as shown on the temperature chart (Figure I). Changes in therapy were governed by *in vitro* sensitivity results. After one month the hip wound was reopened and a large abscess around the femoral head was drained with a wide-bore tube left *in situ*. This was followed by subsidence of the pyrexia for several days, but the fever recurred and became hectic when a deep venous thrombosis of the right thigh made its appearance. Anticoagulant therapy with heparin and "Dindevan" for 17 days reduced the clinical signs of thrombosis. The swinging pyrexia which persisted was ascribed to the uncontrolled wound infection. Within days of the cessation of the anticoagulant therapy there was clinical and radiological evidence of right lower-lobe pulmonary infarction. Hæmoptysis appeared; the sputum rapidly became purulent and, when cultured, yielded the same coagulase-positive staphylococcus as had been obtained from the operation site.

Guided by the in-vitro sensitivity reaction, administration of "Altafur" (2 grammes per day) was instituted. On the sixth day of therapy the patient suffered a rigor—profuse sweating and tachycardia with pulsus alternans. The blood pressure was 100/80 mm. of mercury with alternate beats unrecordable. The apex beat was displaced to the sixth intercostal space outside the left mid-clavicular line. The rate was 160 per minute, with a one-in-two deficit at the wrist, and a triple rhythm and a pericardial friction rub were heard. The jugular venous pressure was elevated to 3 cm., whilst a lumbar pad and ankle œdema were present. Besides the signs of right lower-lobe infarction, the lungs exhibited scattered crepitations.

A blood culture gave a negative result, the hæmoglobin value was 11·3 grammes per 100 ml. and a total white-cell count of 22,800 per cubic millimetre included 90%

of polymorphs. Electrocardiography revealed low-voltage complexes and flat *T* waves throughout, with frequent supraventricular premature contractions.

Staphylococcal myocarditis was diagnosed and intravenous "Spontin" (ristocetin) administration was commenced, with a dosage of 6 grammes daily in a 5% dextrose solution. The blood pressure continued to fall, in spite of treatment with noradrenaline, to 80/60 mm. of mercury, with a one-in-two pulse deficit at the wrist, and hydrocortisone was administered intravenously, with good effect. A maintenance dose of 300 mg. of hydrocortisone daily was used thereafter.

"Altafur" treatment was continued at the original dosage level, as the steroid therapy was difficult to suspend, several attempts being accompanied by profuse sweating, disorientation and hypotension. "Spontin" was discontinued after five days, when the patient appeared to be improving, with his congestive cardiac failure and auricular fibrillation controlled.

The staphylococcus was by now resistant *in vitro* to all agents except "Altafur".

Over a period of three weeks, the patient's gradual deterioration led to death. "Altafur" was withdrawn several days earlier, as it was suspected of being a causative agent in a similar picture of "myocarditis" in two other people sharing the same antibacterial régime.

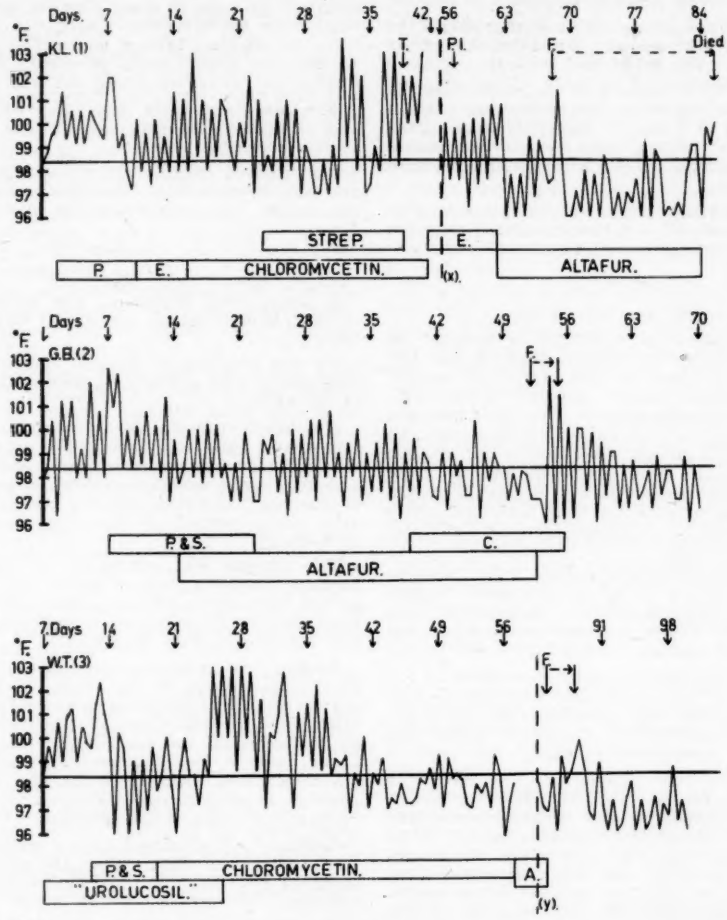

FIGURE I

Temperature charts of patients (Cases I, II and III) correlating antibiotic administration with clinical events. F. = onset of auricular fibrillation. (x). = deletion of 14 days from the chart in Case I. (y). = deletion of 28 days from the chart in Case III. P. = penicillin therapy (250,000 units twice daily). S. = streptomycin therapy (1 gramme daily). E. = "Erythrocin" therapy (1 gramme daily). A. = "Altafur" therapy (2 grammes daily).

Within 24 hours, auricular fibrillation developed, and a diuresis, with subsidence of the peripheral œdema and the pulmonary crepitations, occurred after the commencement of digoxin and mersalyl therapy.

Autopsy Findings.

There was a large abscess with a sinus at the pelvic fracture area and the Pott's fracture was the site of a sinus draining an abscess replacing the hæmatoma. The lower lobe of the right lung was collapsed with a subpleural abscess half an inch in diameter, and the bronchi contained inspissated mucopus. The liver and spleen were a little enlarged by congestive changes. The pericardial sac contained two and a half ounces of clear fluid. The heart was slightly enlarged, mainly through dilatation, the tricuspid valve admitting five fingers and the mitral

valve four fingers. The coronary vessels were free of atheroma and narrowing. The cardiac muscle was normal (macroscopically) and microscopical study revealed minimal round-cell infiltration between the normal muscle network. There was no evidence of myocarditis, and certainly not the bacterial myocarditis that one would expect with *Staphylococcus aureus* infection.

There was no evidence of an abscess that could be designated embolic. Death was attributed to the effects of the staphylococcal infection of the wounds.

Two other patients were isolated in the same room as this case, because of identical staphylococcal wound infections. Withdrawal of "Altafur" therapy was prompted by the fact that both of these men, who were having similar treatment, developed auricular fibrillation within days of each other.

These cases are described below. The clinical impression was that staphylococcal bacteriæmia and/or toxæmia could not be blamed for this complication.

Case II.

Clinical Record.

A male, aged 55 years, was admitted to hospital on June 13, 1960, with a comminuted fracture of the left patella and fractures of the third and fourth ribs on the right. He had a previous history of good health, with no symptoms of cardio-vascular disease. The blood pressure was 165/115 mm. of mercury. A partial patellectomy and repair of the patellar ligament were performed on his admission to hospital. He had a swinging pyrexia from this day, and after seven days cellulitis of the knee was apparent; swabbings were taken for culture and penicillin (500,000 units twice daily) and streptomycin (0·5 gramme twice daily) were administered.

The culture yielded a coagulase-positive staphylococcus sensitive to "Altafur", and resistant to penicillin, "Achromycin", streptomycin, "Chloromycetin", "Terramycin" and "Erythrocin". "Altafur" (0·5 gramme six-hourly) was added to the régime of treatment.

The swinging pyrexia continued, despite excision of the sloughs with drainage of the suppurative arthritis 17 days after admission. Penicillin and streptomycin were discontinued after a 17 days' course, "Altafur" being continued at the original dosage for 40 days.

"Chloromycetin" (250 mg. six-hourly) was added to the "Altafur" therapy for the last 15 days, on receipt of a culture demonstrating that the staphylococcus was now sensitive to "Erythrocin" and "Chloromycetin". After 1 gramme of "Chloromycetin" had been given, the height of the pyrexia was reduced, and after nine days the patient was apyrexial for the first time in seven weeks. This corresponded with a marked improvement in the appearance of the infected knee joint, the wound edges being almost closed and the discharge negligible.

Throughout this long period of swinging fever, the patient looked well, felt comfortable and ate heartily. After 38 days of "Altafur" (2 grammes daily), the patient looked pale and complained of a discomfort behind the sternum.

On examination, auricular fibrillation was discovered, with a ventricular rate of 160 per minute and a radial pulse of 88 per minute, the highest systolic pressure being 90 mm. of mercury and the lowest diastolic pressure 70 mm. of mercury. The apex beat was displaced to the fifth intercostal space, just outside the left mid-clavicular line. The jugular venous pressure was not elevated, nor was there ankle œdema or a lumbar pad. Basal pulmonary crepitations were present. The patient did not look very ill and 1 mg. of digoxin was administered intramuscularly, followed by 0·25 mg. orally every eight hours.

Electrocardiography revealed auricular fibrillation, with a very rapid ventricular response, but no other primary abnormality.

Within 24 hours the temperature rose to 102·2° F., and the pulmonary crepitations became more obvious. The jugular venous pressure rose to a height of 3 cm. with the patient at an angle of 45° and there was mild ankle œdema, a lumbar pad and oliguria.

Fibrillation and hypotension continued, as did retrosternal discomfort and increasing anorexia. "Altafur" was withdrawn, and on the third day the cardiac rhythm returned to a rapid sinus rhythm with numerous supraventricular extrasystoles. There was a mild diuresis, and signs of cardiac failure subsided except for the triple rhythm and a poor pulse pressure. These persisted for a further five days, when digoxin was discontinued.

The low-grade fever resolved with the triple rhythm and at no stage during this episode did the knee show signs of renewed infection.

The patient continued his convalescence uneventfully and was discharged to his home two weeks later with no clinical or electrocardiographic signs of cardio-vascular disease.

Case III.

Clinical Record.

A male, aged 50 years, was struck by a car whilst he was photographing for a city newspaper on May 13, 1960.

He was admitted to hospital comatose, with left spastic hemiplegia and a right parieto-occipital linear fracture of the skull.

His other injuries were fractures of the neck of the left femur and of both pubic rami. A history was obtained from the patient's family of previous good health, and the cardio-vascular system showed no clinical signs of disease. The blood pressure, taken on several occasions after the correction of impending shock, was 125/90 mm. of mercury.

The patient was subjected to tracheotomy, and the cerebral condition was assessed by neurosurgeons, who agreed that there was no lesion reversible by operative intervention. He regained consciousness, but aphasia and left hemiplegia have persisted.

Twelve days after the patient's admission to hospital blade-plate repair of the neck of the left femur was performed. Until this time sulphamethizole ("Urolucosil"), "Dilantin", penicillin and streptomycin were administered as indicated on the temperature chart. The hip wound broke down a month after admission and 16 days after operation, and culture of the pus yielded a coagulase-positive staphylococcus resistant to all antibiotics save "Erythrocin" and "Chloromycetin".

"Altafur" (2 grammes daily) replaced "Chloromycetin" in the treatment régime when the staphylococcus exhibited acquired resistance to this antibiotic on more than one occasion.

On the thirtieth day of "Altafur" therapy the patient was examined because of the findings in Case II on that day. He was a confused, aphasic hemiplegic who nodded confirmation that he felt well. The cardio-vascular system revealed the same abnormalities as in the previous cases in that there were cardiac enlargement, auricular fibrillation with rapid ventricular response and a one-in-two pulse deficit at the wrist. The blood pressure was 80 mm. of mercury (highest systolic) over 50 mm. (lowest diastolic). Pitting œdema of the ankles was present.

The electrocardiograph verified the clinical diagnosis and *ST*-segment sagging in Leads II, III, *a*VF, V6 and V7 was reported as being perhaps due to "fatigue". Digoxin was administered intramuscularly and "Altafur" therapy was stopped.

Within two days, the arrhythmia reverted to sinus rhythm and persisting *ST*-segment depression was reported as being suggestive of a digitalis effect.

Digoxin (0·25 mg. twice daily orally) was discontinued after nine days and the cardio-vascular system gradually reverted to its normal state.

A fortnight later the blade plate was removed and a huge abscess, tracking from the femoral head to half-way down the posterior thigh muscles, was evacuated.

Case IV.

Clinical Record.

A pensioner, aged 83 years, was admitted to hospital on September 8, 1960, with acute retention of urine. He had, during the preceding six months, become increasingly demented and was unable to give a history. Examination revealed a disorientated old man with sighing respirations and a uriniferous breath.

The blood pressure was 155/105 mm. of mercury. A triple rhythm was detected at the apex, and the apex beat was displaced to the sixth intercostal space four and a half inches from the midsternal line. The rhythm was regular and the rate 88 per minute. The bladder was distended to the level of the umbilicus and the prostate was considerably enlarged. Catheterization of the bladder released foul-smelling urine packed with leucocytes.

Prostatectomy was considered unreasonable. The treatment given was continuous bladder drainage. Sulphamethizole (0·2 gramme six-hourly) was administered. A culture of the urine produced a mixed growth of a proteus species and a coliform organism, both sensitive to streptomycin and nitrofuran *in vitro*. Sulphamethizole therapy was discontinued and treatment with "Altafur" (0·5 gramme six-hourly) commenced.

The patient became more alert and less noisy, and gastric intubation to maintain the fluid intake became unnecessary. The urine cleared and the blood urea level dropped to normal limits. A routine electrocardiogram was reported to show sinus rhythm with occasional ventricular ectopic beats. There was left axis deviation and a horizontal heart position. There was some flattening of the *T* waves in Leads I, *a*VL and V5 to V7.

After ten days of nitrofuran therapy the pulse became irregular. An electrocardiogram revealed sinus rhythm with frequent auricular ectopic beats. Within hours, auricular fibrillation developed. Cheyne-Stokes respiration was present. The blood pressure was 140/100 mm. of mercury, readings being taken of the highest systolic and the lowest diastolic pressures.

The apex beat was displaced to the sixth intercostal space five and a half inches from the midsternal line, the rate being 162 per minute at the apex and 84 at the wrist. The jugular venous pressure was not elevated, there was no peripheral œdema and the rales at the lung bases were no more marked than on the day of the patient's admission to hospital.

Electrocardiography revealed atrial fibrillation with rapid ventricular response. Depression of the *S-T* segment with *T* wave inversion had developed in Leads I and *a*VL. There was *S-T* depression in Lead V6.

The patient looked moribund and for this reason therapy was abandoned.

However, within twelve hours normal respiratory rhythm was restored and there was a reversion to sinus rhythm. The rate was 84 per minute with no pulse deficit, and the blood pressure was 140/100 mm. of mercury. "Altafur" therapy was recommenced, having been discontinued for 24 hours. Three days later, auricular fibrillation recurred.

Sinus rhythm spontaneously occurred for the second time after the suspension of "Altafur" therapy. The patient died from an increasing urinary infection with a rising blood urea level ten days later.

There were no further episodes of auricular fibrillation.

Permission to perform an autopsy was refused.

Discussion.

The sequence of events in these patients was similar. The common features of therapy at the onset of auricular fibrillation in each case were furaltadone (2·0 grammes given daily), a multi-vitamin capsule (given thrice daily), ascorbic acid (250 mg. given daily) and ferrous sulphate (3 grains given thrice daily).

The condition reversed in two patients in whom the iron and vitamin administration was continued.

The common lesion in three patients was staphylococcal wound infection, and in the second patient the wound was almost healed although still harbouring the organism. The only signs of acute toxic reaction were confined to the myocardium in the survivors, one of whom reverted in the face of increasing abscess formation and in the absence of antibiotic therapy.

The microscopic findings in the myocardium in Case I did not support the suggestion that bacteriæmia was a causative factor. Staphylococcal myocarditis is usually invasive in the absence of bacterial endocarditis.

Staphylococcal toxæmia and "Altafur" would appear to be the only potential irritants in three cases and withdrawal of the controllable factor, "Altafur", resulted in recovery in two cases from auricular fibrillation.

The fourth patient, although suffering from the effects of advanced vascular disease with a superadded urinary infection, lends support to the conclusion that "Altafur" was the major factor in the production of this arrhythmia in each case.

It is worthy of mention that, in Case I, a patient with preexisting signs of the effects of severe infection developed the complication of auricular fibrillation after only six days of "Altafur" therapy—that is, 12 grammes only. The serum potassium level in this patient was normal throughout.

Summary.

Four cases are reported which possibly provide evidence that high dosage of furaltadone may be followed by the onset of auricular fibrillation. That this complication is relatively benign is illustrated by the paucity of the microscopic changes in the myocardium, the clinical course and the electrocardiographic findings.

There is equivocal evidence that a severely toxic subject may develop this complication more readily.

Three patients recovered from auricular fibrillation and the first patient almost certainly would have died, regardless of his arrhythmia.

Acknowledgements.

I thank the surgeon under whose care these cases were admitted, and Dr. B. Nicholson, Medical Superintendent of the Royal Adelaide Hospital, for permission to publish this report.

I am especially grateful to Dr. Mark Bonnin for his valuable help and encouragement, and to Dr. Kevin Anderson for the bacteriology reports.

Reviews.

A Practice of Anæsthesia. By W. D. Wylie, M.A., M.B. (Cantab.), M.R.C.P., F.F.A.R.C.S., and H. C. Churchill-Davidson, M.A., M.D. (Cantab.), F.F.A.R.C.S.; 1960. London: Lloyd-Luke (Medical Books) Ltd. 9" x 6", pp 1071, with 246 illustrations. Price: 105s.

A FRESH and stimulating approach to anæsthesia has been accomplished by the St. Thomas Hospital group in writing this book. They have achieved, with credit, their object of giving "the reader a broader view of anæsthesia and of providing him with a better foundation from which to assess the value of the specialty".

The book as a whole is very readable and well documented, and the text is most lucid. Descriptions of the fundamental concepts of physiology and pharmacology are delivered with clarity, and their understanding is simplified by reference to everyday clinical experience. This is a praiseworthy introduction into otherwise factual discussions; the need for such constant correlation between the laboratory and the patient has been neglected too often in the past.

Some chapters are inadequate and could well be amplified. "Oxygen Therapy" is an example; this is such an important aspect of modern anæsthesia as to warrant a much more detailed presentation. The section on "Theories of Anæsthesia" would be more instructive if these were discussed in the light of more recent knowledge.

No mention is made of tension pneumothorax or of mediastinal or interstitial emphysema in discussing post-operative pulmonary complications.

The introduction of extracorporeal circulation is welcome and is quite well presented; but it was a surprise not to see any mention of the oxygenator most commonly in use at present—namely, the Kay-Cross disc. Likewise, in the discussion of elective cardiac arrest, no mention was made of the most simple method and one widely practised—namely, "anoxic arrest".

The concept of red-cell membrane impermeability to cations by now should be deleted from all textbooks; yet it appears again here in a discussion on the "chloride shift".

Blood volume and its measurement and regulation are sadly neglected; yet it is vitally important in the pre-operative assessment and preparation of many types of patients and in the accurate appraisal of post-operative hæmorrhage. Methods of estimating operative blood loss are given scant mention.

Criticisms such as these are only minor when related to the high standard of the work. This is a book destined to play a major role in the education of anæsthetists. One has only to read the sections on neuro-muscular transmission block and blocking agents to be convinced that here is a great work, and one to be proud of owning.

Pyelonephritis. By Fletcher H. Colby, M.D.; 1959. Baltimore: The Williams and Wilkins Co. 9" × 6", pp. 226, with 94 illustrations. Price: 82s. 6d.

THE first chapter in this book traces the development of our knowledge of pyelonephritis, from the realization by Wilson and Schloss in 1929 that "pyelitis" as such did not exist, to the present concepts of ascending urinary tract and blood-borne infections, with their sequelæ of renal damage and even hypertension. Colby points out the insidious progress of the chronic infection, and stresses the necessity for repeated cultures and examinations of the stained sediment of urine. Short chapters then follow on the embryology, anatomy and physiology of the kidney and on the incidence of pyelonephritis, which has been shown at the Massachusetts General Hospital to average six cases per thousand admissions over the past 10 years.

In the chapter on acute pyelonephritis, the author stresses the necessity to use a catheter to obtain a specimen of urine in the female, and states that, though occasional cystitis may follow in an abnormal bladder, no greater harm is likely to ensue. He rightly condemns prophylactic chemotherapy with an indwelling catheter, and gives a good, up-to-date summary of the present drugs in use in urinary tract infections.

Forty-three pages are devoted to chronic pyelonephritis, but the section on treatment is disappointing. Prolonged administration of a small dose of sulphonamide is recommended; but nowhere are the insoluble sulphonamides mentioned, although great stress had previously been laid on the blood-borne origin of the infection. The idea that the colon bacillus in the kidney may have come from the bowel is not mentioned, and one leaves this chapter with a sense of frustration.

A special chapter is devoted to infants and children, and a clear, up-to-date picture is presented. The author points out that in many cases the oustanding symptoms are in the gastro-intestinal tract, and in others there are generalized symptoms, such as headache, anæmia, irritability, failure to thrive and chills. Other chapters are devoted to pyelonephritis in association with diabetes, pregnancy and hypertension. The last is one of the best chapters and worth reading by both urologist and physician.

This is a useful book, clearly and succinctly written, with 95 photographic illustrations, and produced in accordance with the usual Williams and Wilkins high standard.

Recent Research in Freezing and Drying. Edited by A. S. Parkes, C.B.E., F.R.S., and Audrey U. Smith, D.Sc., M.B., B.S.; 1960. Oxford: Blackwell Scientific Publications. 9¾" × 6", pp. 328, with many illustrations. Price: 63s.

THIS book can be recommended to anyone interested in the theory or application of freeze-drying techniques, although generally such collections may be criticized on two grounds. Firstly, time must necessarily elapse between the presentation of the papers and their publication. This criticism may well be justified here, since freeze-drying techniques are still in an early stage of development when changes of interpretation are frequent. Secondly, a collection of articles originally prepared for reading often lacks cohesion and continuity when presented in book form. Here the editors have preserved continuity as much as possible by grouping the subjects into five parts, which progress from fundamental principles to clinical applications. The first part deals with the physics of freezing, the second with the freezing of living tissue ranging from unicellular organisms to whole animals. The last three parts deal with the principles of freeze-drying, the treatment of micro-organisms and the preparation and preservation of bone, arteries and corneæ for surgical purposes.

The papers are almost without exception clearly presented, and apparatus is well illustrated. There is a tendency to include too many graphs in the papers on the physics of freezing and drying. Some case histories are given in the clinical papers with a limited discussion of certain aspects. Each author has included an extensive bibliography.

The First International Symposium on Freeze-Drying was held in 1951, and it is obvious that rapid advances have been made in understanding the fundamental principles of freezing and drying and that some control of the process has been attained. One notable result has been the preservation of viable bull spermatozoa. Clinical applications, up to the time of presentation of these papers, had been mainly concerned with the use of non-viable implants. The author of the final paper has given an indication of possible developments in freezing and drying viable material, with descriptions of experiments using rat ovarian tissues.

A Short Textbook of Surgery. By C. F. W. Illingworth, C.B.E., M.D., Ch.M., F.R.C.S., Ed., F.R.F.P.S., Glas., Hon. F.A.C.S., Hon. F.R.C.S., Eng.; seventh edition, 1959. London: J. & A. Churchill Ltd. 9¼" × 5¾", with 16 plates and 263 text-figures Price: 45s.

IN this, the seventh edition of his "Short Textbook of Surgery", Professor Illingworth continues to deal competently with the formidable task of writing single-handed a textbook of surgery. On the whole, the requirements of the undergraduate student of surgery are admirably met, and within such a small compass that they should be easily assimilated within the short time available in the crowded curriculum. Essentials are stressed, and described clearly and simply. The many illustrations and skiagrams are technically good, and they are well chosen.

The additions to surgery in recent years are succinctly assessed—the cobalt beam, the McWhirter method of treating breast cancer, hormonal surgery for advanced cancer, isotopes, anticoagulants and so forth. But a grave defect is notable in the treatment of chest injuries. The basic necessity of keeping the air passages clear and ensuring respiration, even by tracheotomy, tracheo-bronchial suction and respirator machines in severe cases, is not even mentioned.

A curious anomaly, not peculiar to this book, is the absence of any mention of the anxiety and stress neuroses, although these are of great importance in the differential diagnosis of surgical problems as met with every day in the consulting rooms of general practitioners and of surgical consultants, general and special.

Finally, the student will be puzzled by the contradiction which appears in the directions for post-operative treatment, and for the delayed treatment of appendicitis. The affected parts, the intestines, must be kept "absolutely at rest"—but the bowels may be opened by enemas. The student who has seen under fluoroscopy the commotion produced in ileum and colon by an evacuant enema will wonder what is meant by "absolute rest".

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Surgery of the Anus, Rectum and Colon", by J. C. Goligher, Ch.M., F.R.C.S.; 1961. London, Melbourne, Sydney, Toronto, Cape Town, Auckland: Cassell & Company Ltd. 9¾" × 7½", pp. 838 with illustrations. Price: £8 8s. net (English).

"Medical Entomology", by W. B. Hermes, Sc.D., and M. T. James, Ph.D.; fifth edition; 1961. New York: The Macmillan Company. 9¼" × 6", pp. 628, with illustrations. Price not stated.

The Medical Journal of Australia

SATURDAY, MAY 20, 1961.

THE DEVELOPMENT OF MEDICAL JOURNALISM IN AUSTRALIA AND NEW ZEALAND.

THE growth of Australian medicine in the past half century, especially vigorous since the second World War, has stimulated an expansion in medical journalism and an urge for the raising of its standards. It is not necessarily chauvinistic to wish to ensure recognition of the Australian origin of good Australian work; it is simply an important factor in further raising our standards, in retaining our best people and in attracting overseas talent to our shores. Undoubtedly such recognition is facilitated by publication in an Australian journal, provided that the status and distribution of the journal itself are adequate. While Australian medicine has every right to ask that a fair proportion of important Australian work should be published here, authors have an equal right to ask that their work should not as a result be passed into obscurity or lose its status. This is not at all a simple matter, but the problems raised are not insoluble, and now is the time that they should be solved. A working partnership between authors and journals in this country, based on common sense and mutual understanding, could mean a great deal for Australian medicine as it comes into flower, and is surely not too much to hope for.

It was with such thoughts as these in mind that a small group of interested people decided some little time ago that those concerned with medical journalism and its future in this country should be brought together if possible. The sponsorship of the Post-Graduate Committee in Medicine in the University of Sydney and of the Post-Graduate Medical Foundation was obtained, discussion of the idea was extended to New Zealand, and the result was the First Conference on Medical Journalism in Australia and New Zealand, which was held in Sydney on October 26, 27 and 28, 1960. The proceedings of the Conference have now been published,[1] and coincidently with their appearance as far as possible, we publish in this issue the three papers read at the opening session (see pages 721, 723, 727). The Conference brought together over 60 people with an active interest in medical journalism, including those who could represent the points of view of authors and contributors, as well as editors and editorial representatives of existing journals in Australia and New Zealand (about a dozen in all). Discussion was free and frank, and the immediate effect was stimulating. As the intention is to follow the matter up in a number of different ways, lasting benefit from the Conference may reasonably be expected.

Much of the virtue of the Conference resulted from the fact that it was essentially a round-table affair. Only six formal papers were presented. These were the three published in this issue and three valuable lecturettes of a technical nature, in which Mr. J. H. Noldt discussed the printing of medical journals, Dr. Colin Roderick considered various aspects of the publication of medical books in Australia, and Mr. E. J. A. Hyde provided information on the preparation of illustrations from the point of view of the engraver and block-maker. At the three round-table discussions, which dealt with present editorial policies of current journals, the contributors' and readers' interests and editorial methods, the Conference really got down to business; many issues were clarified, and many problems were raised though not always solved. At the concluding session six monitors, each responsible for a particular theme, drew the threads together; their six themes were—the editor, the contributor, the reader, coordination between journals, encouragement of publication at home, and new and specialist journals. An inspection of the printing installation of the Australasian Medical Publishing Company Limited was generally appreciated, and this with a number of social functions provided opportunities for informal discussion and personal contact between those at the Conference.

As a corollary to the Conference, a series of recommendations has been made by the planning subcommittee. The following are the most important: (*a*) that further similar conferences should be held, the first in one year's time; (*b*) that the formation of an association of editors should be sponsored by an appropriate post-graduate body; (*c*) that a booklet to assist the intending contributor should be published; and (*d*) that lectures or courses on the art of writing and literary advisory services should be provided by State post-graduate committees. It is hoped that a conference of editors will be held in the near future, and that the various other recommendations may be got under way if they seem to be practicable after discussion with relevant persons and organizations. In the meantime we hope that the proceedings of the Conference will be widely distributed and studied. It is not practicable to condense the findings here, as a great mass of material was presented to the Conference, and it deserves careful consideration in its own context.

The great value of this Conference lay in its essentially open and democratic character combined with the fact that it was fully representative. Anyone was welcome to attend. All existing journals were represented. Editors and publishers, contributors and readers were given ample opportunity, within broad time limits, to have their say, and a most valuable climate of mutual understanding was generated. We hope that this has set the pattern for the development of medical journalism in Australia, not only at further conferences, which should by all means be held, but in day-to-day transactions and relations. In

[1] *Post-Grad. Bull. Med. Univ. Sydney*, February, 1961.

particular it is to be hoped that the most careful consideration will be given to all aspects of the subject before any more new journals are launched. Specialist journals of various types will certainly be required in Australia as time goes on, and a number have already appeared, but we hope that common sense will prevail. The enthusiasm of a small specialist group is no more a justification for the premature publication of a new journal than is the vested interest of an established journal a ground for holding up what the current situation requires. A small journal, produced with meagre financial resources and doomed to a very limited circulation for some time to come, may provide an easy way of getting local work into print, but it may also ensure that it passes swiftly into relative obscurity. At the same time a continued heavy responsibility rests on existing journals to meet current needs. This is by no means easy, as all will know who are experienced in journalism, but the responsibility must be accepted. For our part, we look forward to the putting into effect of the recommendations of the Conference and the further development of the relations established. In particular we welcome the prospect of continued encounter, uncomfortable though it may sometimes be, with authors and readers and with those responsible for the production of other journals. So long as it helps us to get on with the real job of advancing medicine, it will be worth while.

Current Comment.

"EAT BETTER FOR LESS."

A BOOKLET entitled "Eat Better for Less" published by the Institute of Anatomy, Canberra, has aroused comment both in Parliament and in the public Press. Certain statements in the booklet relating to the value of common foods, from both the nutrition and the family budget points of view, have been construed as cutting across the economic interests of, for example, the dairying industry. Awkward questions have been asked on whether this represents Government policy, and revision or suppression of the booklet has been suggested.

We are pleased to see that the Minister for Health, Dr. D. A. Cameron, in a statement issued on May 4, 1961, said that the Department of Health would be very reluctant to discontinue publication of the booklet. He considered that to withdraw the booklet, far from helping the dairying industry, could deprive it of a great deal of benefit. He said that the whole purpose of the booklet, from first page to last, was to point out to Australians that they were in the scientifically fortunate position that Australia's primary production food items were the most nutritious available. The booklet, on page after page, argued convincingly in favour of eating more meat, fish, eggs, cheese, flour, cereals, butter and vegetables and drinking more milk. It pointed out that if some people could not afford all those food items in their more commonly used forms, they were available in other forms equally nutritious. Only incidental mention was made of the scientifically established fact that butter and table margarine were equally good sources of fat and vitamin A. Nowhere in the booklet was there the slightest suggestion that people should eat less butter. The contrary was the case. The booklet stated that sugar, jam, honey, syrup and other sweet spreads all had their place in the diet as a source of calories, but that they lacked protein. Wiser buying of eggs, meat, fruit and vegetables, it was suggested, should accompany them. The booklet was based on scientific information, interestingly presented for the sole purpose of assisting every family to eat better, and families on lower incomes to get the best nutriment value from their weekly expenditure.

The Minister for Health is understandably diplomatic. He supports the booklet and at the same time shows due respect for the other interests concerned. In his position this is a reasonable approach. However, we can be more forthright and emphasize a different issue. The work and publications on nutrition of the Australian Institute of Anatomy are above reproach and widely esteemed. They may be regarded as scientifically objective. "Eat Better for Less" follows these standards, and as a popular production is attractive and easy to read. It should be distributed as widely as possible. The idea of suppressing detached scientific statements on such subjects as nutrition because they conflict with vested interests is unthinkable. We hope that the Minister, whatever reasons in his political wisdom he may give for his attitude, will stick to his guns.

ISONIAZID ALONE?

IN the consideration of modern chemotherapy against tuberculosis, two facts stand out. Firstly, a combination of two drugs gives better results overall, particularly in averting or delaying the onset of that bugbear, drug resistance. Secondly, isoniazid is undoubtedly the best available drug at present, and it should always be one of the combination, at least in initial therapy. It is recognized, however, that at least in some underdeveloped countries, two-drug therapy may be impracticable, and it is admitted, rather grudgingly, that the benefits of giving isoniazid alone outweigh the dangers. It is probably true to state that the majority of tuberculosis workers do not believe that there are any circumstances which warrant the use of isoniazid alone in so-called civilized regions. None the less, a small minority group, headed by Walsh McDermott, has persistently advocated this single drug usage in certain types of cases and has given good reasons therefor.

Strong support has been given to their cause by no less an authority than the United States Public Health Service. Recognizing "the probability that many patients are being treated with isoniazid alone", especially since the practice is increasing of using isoniazid for prophylaxis, they have reviewed[1] the case histories of 411 patients treated in 1952 for forty weeks, to see what has happened to isoniazid-treated patients. Three groups, approximately equal in numbers, had one of three regimes: isoniazid alone, streptomycin twice weekly plus isoniazid daily, and streptomycin twice weekly plus PAS daily. The streptomycin-isoniazid group did best of course in reversal of infectiousness, but the important point is that those who "succeeded" on isoniazid alone were just as well after five years as those who received combined therapy. In short, there is no warrant for apprehension about the long-term effectiveness of isoniazid in patients whose immediate response is adequate. This is to be taken in conjunction with an earlier report,[2] that for patients without cavities or with only one cavity isoniazid is as effective as any combination, but it is decidedly less effective for patients with multiple cavities.

The crucial question then arises: do drug-resistant organisms emerge more frequently when isoniazid alone is used? Again, reference is made to earlier Public Health Service Therapy Trials,[3] which showed that "if tubercle bacilli are continuously discharged during prolonged chemotherapy, the organisms nearly always develop resistance to the particular agents to which they have been exposed". In other words, irrespective of the drugs used, persistent organisms will become drug-resistant to that particular regime. Their final paragraph merits quotation in full:

[1] *Amer. Rev. Resp. Dis.*, 1960, 82: 824.

[2] Transactions of 13th Conference on Chemotherapy of Tuberculosis, V.A., Army and Navy, 1954: 134.

[3] *Amer. Rev. Tuberc.*, 1955, 70: 739.

Examination of all the evidence leads to the conclusion that there is no demonstrable reason for avoiding the use of isoniazid alone in the treatment of some patients with pulmonary tuberculosis. Dissenters might ask "Why not overtreat, if you will, with isoniazid-P.A.S.? It is doing no harm and it avoids a decision whether a patient is suitable for single-drug therapy." They overlook three cogent reasons for the appropriate use of a single drug, decreased toxicity, convenience, and economy.

In Australia, where taxpayers foot most of the bill in all forms of chemotherapy, it may be noted that PAS and its derivatives are quite expensive drugs, while isoniazid is relatively cheap. For those who are still dubious, and demand a more precise definition of "some patients", this advice may safely be given: if the medical attendant is satisfied that no cavitation is present in his patient (and this may mean tomographic study), treatment by isoniazid alone is sound therapy.

THE PHILOSOPHICAL SCIENTIST.

SIR FRANCIS WALSHE[1] has lately analysed a statement of another eminent neurologist (W. R. Brain[2]): "We cannot separate our conclusions concerning the nature of perceiving from our conclusions concerning the nature of what we perceive." Leading neurophysiologists, Walshe writes, have suggested that colours and smells belong not to nature but only to the perceptual world of the observer—that they are merely symbols with no real existence. He believes that these errors in biology and medicine must be expected when scientists stray unknowingly into the field of philosophy. The biological scientist is qualified to make observations on nature as revealed to him in experience. He should not be concerned with the theory of knowledge—what nature does to the mind.

This error Walshe regards as a resurrection of Locke's historic doctrine of primary and secondary qualities in perception. This is a general term which involves thought and feeling; it is not restricted to vision. Locke disavowed any intention of dealing with the physical basis of perception; yet he offered a physical theory based on Newton's particulate doctrine of the transmission of light and sound. He divided the qualities of sensation into primary (extension, solidity, motion) and secondary (colour, scent, temperature, sound); the secondary qualities, he wrote, arose by a power of the primary qualities to produce those sensations in us. But the more closely we look, Walshe states, the more indistinct becomes the supposed difference between the primary and secondary qualities. Even Locke himself was inconsistent in appealing to the senses to confirm the impression of solidity, redness, etc. Walse repeatedly cites A. N. Whitehead,[3] who is a clear thinker with a keen eye for fallacies. Whitehead has demonstrated that for natural science everything perceived is in nature; the red glow of the sunset is as much a part of nature as are the molecules and wave movements by which men of science would explain the redness.

Recent advances in the anatomy of sensation, Walshe continues, support Whitehead's view. The differences between touch, pain, heat, cold and pressure do not depend on impulses from specific nerve endings; they are due to variations in pattern, duration and intensity of impulses coming from nerve endings which are alike throughout the body. The revelation of nature to the individual is through constant streams of afferent impulses. What we see depends on the coordination and transformation of those streams. No attempts to explain have yet bridged the gaps between nerve impulses on the one hand and sensations on the other. The patterns of nerve impulses, no matter how intricately woven, do not reveal the "how". Sensations of solidity go with sensory impulses; sensations of colour go with visual impulses, and we cannot separate them. Walshe cites Sherrington and Hughlings Jackson, who did not believe that natural science would take over the whole realm of human thought. Their observations were founded firmly on anatomy and physiology and did not get bogged down in philosophy.

[1] *Perspect. Biol. Med.*, 1960, 3: 343 (Spring).
[2] "Mind, Perception & Science", 1951, Blackwell, Oxford.
[3] "The Concept of Nature", 1926, Cambridge University Press.

A NEW SECRETARY-GENERAL FOR THE WORLD MEDICAL ASSOCIATION.

DR. HARRY S. GEAR, an eminent international medical leader in the field of hygiene and tropical medicine, will become Secretary-General of The World Medical Association on July 1, 1961. Dr. Gear is currently the Director of Pneumoconiosis Research, Council for Scientific and Industrial Research-Industrial Medicine in Johannesburg, South Africa. Of British descent, Dr. Gear received his education at the Universities of Witwatersrand and London, engaged in general practice in London, Rhodesia and South Africa, and had hospital and clinic experience in China, the Middle East and Africa. He is a member of the British Medical Association, the Medical Association of South Africa, and the Royal Society of Tropical Medicine in London. In military service from 1940 to 1944, Dr. Gear was assigned as Assistant Director of Hygiene, Middle East Force, in which post he was responsible for coordinating the civil medical and health services of all Middle Eastern countries with the war effort.

At the international level Dr. Gear attended the International Health Conference in 1946, was a member and Chairman of the WHO Executive Board and served as Assistant Director-General and Consultant of the World Health Organization. His awards include the most distinguished graduate medal awarded by the British Medical Association and South African Medical Association, the Ducan Medal in Tropical Medicine, and mentions in dispatches from the Middle East campaign. He is a member of numerous voluntary organizations, a fellow of the Royal Statistical Society and Royal Society of Health, and a member of the Royal Institute of International Affairs, London. He is the author of a number of books and monographs in the fields of epidemiology, health statistics, industrial health and medical research. More than seventy of his technical and professional papers have appeared in various medical and scientific journals in Europe, Canada and Africa and internationally. The World Medical Association is to be congratulated on obtaining the services of a man of Dr. Gear's calibre as its Secretary-General.

SENSIBILITY TO PAIN.

IN an attempt to obtain quantitative data on the question whether the perception of pain is diminished in old age, as is often supposed, E. D. Sherman and E. Robbillart,[1] of Montreal, have tested 90 normal young adults (aged 20 to 30 years) and 110 normal elderly subjects (aged 65 to 97 years) for cutaneous pain sensitivity, using the Hardy-Wolff-Goodell dolorimeter. These subjects were drawn from three ethnic groups. Anglo-Saxon, French and Jewish. In the event it was found that pain sensitivity decreased with age, as shown by increased average values of the pain-perception threshold in the older groups, and this finding was the same in each of the three ethnic groups studied. The men showed higher readings (i.e. less sensitivity) than the women, but these differences were not significant except in the case of the Anglo-Saxon males. Among the younger subjects, whether from stoicism or stupidity, the stolid Anglo-Saxon of either sex showed consistently higher pain thresholds than his or her French or Jewish counterparts. There were, however, no appreciable differences among the elderly of the three races.

[1] *Canad. med. Ass. J.*, 1960, 83: 944 (October 29).

Abstracts from Medical Literature.

OPHTHALMOLOGY.

Operative Procedures in Vertical Muscle Deviations.

E. A. DUNLAP (*Arch. Ophthal.*, August, 1960) lays down general principles for dealing with the conventional vertical muscle imbalances, namely the strengthening of underacting muscles and the weakening of overacting muscles, direct surgery to muscles acting in the field of greatest deviation, the weakening of the secondary deviators first in alternate fixation, and operation on the non-fixing eyes. Exceptions to these principles are mentioned. Surgical procedures involving the vertical muscles are discussed. The A-V syndromes are discussed and the varying ideas on ætiology and therapy outlined.

Surgical Treatment of Divergence Excess.

J. A. DYER AND T. MARTENS (*Amer. J. Ophthal.*, August, 1960) review the treatment of 27 patients with divergence excess. Orthoptic treatment before operation has very little effect on the amount of deviation. In each case operation consisted of bilateral recession of the lateral rectus muscles. In younger children the muscles were recessed 6 mm. and in older children 7 mm. In all cases there was a reduction of the divergence for distance, and in no case did the operation produce an overcorrection. The authors recommend bilateral lateral rectus recession for patients with divergence excess type of ocular deviation.

Glaucoma Family Study.

B. BECKER *et alii* (*Amer. J. Ophthal.*, October, 1960) undertook a study to evaluate pressure, facility of outflow, discs and visual fields in the close relatives of patients with established glaucoma. Families were selected in which there were at least two known cases of chronic simple glaucoma. The people studied were all siblings, children and parents of glaucoma patients and were over 15 years of age. The examination comprised a recording of the visual acuity with and without glasses, external examination, slit lamp examination, visual field examination with perimeter and one-metre Bjerrum screen, ophthalmoscopy, applanation tonometry, tonography and water provocative test and, finally, gonioscopy. The criteria which made a patient suspect were tension greater than 22 mm. of mercury, outflow facility less than 0·18, increase in tension after water consumption greater than 7 mm. of mercury, and enlargement of the blind spot of 15 to 30 degrees. Treatment was recommended for any eye with a tension over 30 mm. of mercury either before or after water consumption, with or without field loss. In the 110 close relatives of glaucoma patients studied 5·5% had a tension of 30 mm. of mercury or higher, and this figure became 9·7% in those relatives aged 40 years or over.

Clinical Results of Light Coagulation Therapy.

D. K. PISCHEL AND B. H. COLYEAR (*Amer. J. Ophthal.*, October, 1960) report on their experiences with light coagulation. In retinal detachment work light coagulation is used in prophylaxis and to help cure an existing detachment. The authors used light coagulation prophylactically in cases of retinal tears without detachment, degenerative areas in second eye, pre-senile cataract with degenerative retinal changes, cataract with previous retinal detachment surgery, and untreated peripheral retina after retinal detachment surgery. The authors have also treated von Heppel-Lindau disease, Eales' disease, small malignant melanoma and retinoblastoma. The advantage of this technique in detachment surgery is its simplicity; areas of coagulation are placed exactly where they are required. A disadvantage is that it can be used only in cases in which the retina is practically completely re-attached.

Chamber Angle Anomalies in Systemic Connective Tissue Disorders.

H. BURIAN *et alii* (*Arch. Ophthal.*, November, 1960) studied the chamber angle in patients with Marfan's syndrome, scoliosis, Legg-Perthes' disease, idiopathic genu valgum and related conditions, and they were able to demonstrate the presence of mesodermal chamber-angle changes. These chamber anomalies consist of the presence of bridging pectinate strands and iris process, irregularity and fraying of the iris root, general thinning of the last roll of the iris, mound-like formations near the root of the iris and abnormal vessels. It has been suggested that Marfan's syndrome and allied disorders are an expression of inborn error of metabolism probably of mucopolysaccharides. Associated chamber-angle anomalies may be due to the same cause.

Retinal Detachment following Congenital Cataract Surgery.

F. CORDES (*Amer. J. Ophthal.*, November, 1960) reports on 112 eyes enucleated after failure of surgery for congenital cataract. In this series, 20% had had a single needling, 41% had had multiple needlings, 2% had had a Ziegler through-and-through operation and 31% had had a linear extraction. Retinal detachment occurred in 48% of the 112 eyes, and of this percentage 13% had had a single needling, 50% had had multiple needlings. The interval between operation and the detachment varied from less than one year to 33 years. There were 19 eyes in which detachment occurred in the first year after operation, and in this group hæmorrhage was an important factor. In 14 eyes detachment occurred between one and 10 years after surgery, and the type of surgery had no influence on the result. In 21 eyes detachment occurred after 10 years, and in this group 76% had had multiple needlings. In 10 of these 21 eyes there were strands of connective tissue extending from the pupillary area to the detached retina. The author concludes that linear extraction is the safest procedure; multiple needlings cause greatest risk of post-operative detachment. Uveitis is commonly associated with detachment in the immediate post-operative period, mydriasis is essential or an iridectomy should have been performed if the pupil could not be dilated pre-operatively. Steroids administered post-operatively reduce the evidence of uveitis.

The Action of Di-Isopropyl-Fluorophosphate in Cyclodialysis Clefts.

G. GORIN (*Amer. J. Ophthal.*, November, 1960) discusses the effect of di-isopropyl-fluorophosphate (D.F.P.) on the cyclodialysis cleft and reviews the indications for cyclodialysis. The most important cause of failure of cyclodialysis is the closure of the cleft due to approximation of the raw surfaces of the cleft. The author has found that D.F.P. will keep the cleft open. It is used daily for several weeks commencing on the first post-operative day. Cyclodialysis is indicated in glaucoma in aphakic eyes. In this type of glaucoma cyclodialysis detaches anterior peripheral synechiæ and frees the trabecular meshwork. In addition a drainage cleft is produced. In chronic simple glaucoma with wide angles, cyclodialysis will be effective provided the disease is not advanced, for hypotony may produce further loss of vision and field. Alternatively tension may not be lowered because the choroid is atrophic and has a poor absorptive capacity. Cyclodialysis combined with peripheral iridectomy is suitable for cases of chronic non-congestive angle-closure glaucoma.

A Plea for Lateral Orbitotomy.

H. B. STALLARD (*Brit. J. Ophthal.*, December, 1960) describes a modification of lateral orbitotomy, which he considers most suitable for removal of orbital tumours. Most retro-ocular tumours are situated above, to the lateral side of and below

the optic nerve, only about 4% being on the medial side of the nerve. Points against the transfrontal approach are: the mortality of 4% even in good hands, failure to find the neoplasm, the possible need for excision of part of the frontal bone, post-operative period, ptosis and superior rectus weakness, and danger of opening the sinuses. The main features of the modified lateral orbitotomy are that the incision is lower and in the eyebrow line, the lateral wall is preserved, the orbital periosteum is reflected in two flaps and sewn up at the end of the operation. The operation is described in detail.

Normal Vitreous Loss.

H. F. HILL (*Amer. J. Ophthal.*, November, 1960) discusses ways and means to prevent vitreous loss, all of which are designed to reduce intraocular pressure. Adequate anæsthesia, comfort of the patient, Flieringer rings and digital pressure are all recommended. Gentleness during surgery and release of pressure due to the speculum are also necessary. If prolapse occurs, this tissue should be excised and corneoscleral sutures tied. Extra sutures may be necessary. Injection of air into the anterior chamber and the use of miotics are recommended.

PHYSICAL MEDICINE AND REHABILITATION.

Rehabilitation of the Rheumatoid Hand by Surgery.

E. D. HENDERSON AND P. R. LIPSCOMBE (*Arch. phys. Med.*, January, 1961) state that in the past 10 years surgeons interested in the hand have shown that some disabling conditions and deformities of the hand due to rheumatoid arthritis may be treated effectively by surgical means. In certain of these conditions surgery appears to offer real advantages over the traditional, more conservative methods. The authors describe some of the indications for operation and the results to be expected. They emphasize that the operative approach is not used to improve the appearance of the hand, but to improve function and to eliminate or reduce pain. Most of the operations can be performed with local anæsthesia. The convalescence from primary surgical procedures, particularly the arthroplasties of the metacarpo-phalangeal joints, may require several months, gradual improvement in function occurring over the entire period of convalescence. Once a good result has been obtained, the improvement seems to be maintained, provided that there is no serious flare-up of the arthritis after operation. The authors comment that at present the place of surgical methods in the general scheme of treatment of rheumatoid arthritis is not formally established. It therefore seems important for physicians to be aware of the possibility of improving by surgical means the function of hands crippled by rheumatoid arthritis.

Ætiology of Decubitus Ulcers.

M. KOSIAK (*Arch. phys. Med.*, January, 1961) discusses the ætiology of decubitus ulcers on the basis of 80 separate experiments to determine accurately the effect of both constant and alternating localized pressure on normal and denervated muscle. Localized pressures were applied over muscular tissue, and the relationship between microscopic changes in the muscle and time and intensity of pressure was noted. Data compiled demonstrated the great susceptibility of tissue to relatively low constant pressures for short periods of time, and the somewhat greater resistance to change following the application of equal amounts of intermittent pressure. A critical time interval was noted at which pathological change occurred in both normal and denervated skeletal muscle after the application of pressure.

Ultrasound in the Treatment of Contracture Associated with Hip Fracture.

J. F. LEHMANN *et alii* (*Arch. phys. Med.*, February, 1961), on the basis of previous studies, have assumed that ultrasound is the only heating agent which can raise the temperature in and around the hip joint to therapeutic levels, and which can be used safely in the presence of metallic implants. Physiologically, ultrasound increases extensibility of tight periarticular structures and scar tissue; it also has a pain-relieving effect. Thus, if used in conjunction with other physical therapy procedures, it was expected that ultrasound would be most effective in treating the joint contractures which tend to develop in elderly patients after internal fixation of hip fractures. A statistical comparison of the results obtained with ultrasound and those obtained with infra-red irradiation showed that ultrasound was significantly more effective. The study also confirmed clinically that ultrasound can be used safely in the presence of metallic implants.

Relationship of Progress in Speech Therapy to Progress in Physical Therapy.

D. R. BOONE (*Arch. phys. Med.*, January, 1961) reports a study relating progress in speech therapy to progress in physical therapy. The results indicate that patients who are so affected physically and psychologically that ambulation training is not possible will in general not benefit from speech therapy. Among patients who do well in physical therapy, there is approximately a 50% expectancy that improvement in speech will occur. It was found that, except for hemiplegics and patients with multiple sclerosis who do poorly in physical therapy, a prognostic index for speech improvement cannot be realistically based on the patient's present or predicted performance in physical therapy. Another implication from the study is that among the large population of physically improving hemiplegic and multiple sclerosis patients, it is not possible to predict by physical status alone how well a patient will do in speech therapy. While a significant relationship was found between absence of progress in speech therapy and absence of progress in physical therapy, there was only a chance relationship between progress in physical therapy and similar progress in speech therapy.

Electromyographic Evaluation of the "Cross Exercise" Effect.

N. PANIN *et alii* (*Arch. phys. Med.*, January, 1961) have performed electromyographic studies of muscles in the upper and lower extremities to evaluate the effect of exercise of one muscle upon non-exercised muscles. The subjects were normal, healthy young men. The greatest electromyographic activity was found in the exercised muscle. Electromyographic potentials of low amplitude and low frequency were found in all non-exercised muscles studied. These potentials were not limited to the contralateral muscle, but were widespread throughout all four extremities. The electrical activity appeared to be greatest in those muscles required to stabilize the body during exercise. The amplitude and frequency of these potentials would indicate that they were of insufficient magnitude to constitute exercise effect.

Modified Shoulder Saddle Harness for Upper Extremity Prostheses.

L. F. BENDER AND J. W. RAE (*Arch. phys. Med.*, February, 1961) describe a new shoulder saddle harness for upper extremity prostheses, and state that in a clinical trial over 18 months involving 28 amputees (10 above-elbow, 18 below-elbow) the new harness proved to have considerable advantages over the old figure-of-eight harness.

Diagnosis of Hysterical Paralysis.

R. E. WORDEN *et alii* (*Arch. phys. Med.*, February, 1961) state that the diagnosis of psychogenic paralysis is not difficult if the examiner is familiar with the bizarre response to tests displayed by this type of patient. They present a working classification of the ætiologies of muscle weaknesses, apparent and real, and list the causes of abnormal gait patterns. Clues are offered to help clarify the differential diagnosis, and it is explained how electrodiagnostic tests provide helpful information.

Medical History.

THE DEVELOPMENT OF THE SPHYGMOMANOMETER.[1]

THERE are some mildly surprising aspects to the history of taking the blood pressure. About 1710 Stephen Hales (1677-1761) made direct measurements of arterial pressure in the horse and other animals by observing the height to which the column of blood rose in a tube connected to an artery. Equally important, he demonstrated the influence of the state of the peripheral vessels on the pressure level, as well as the effect of excitement, sighing and blood loss. It is surprising that no interest had been shown in the blood pressure for almost a century after William Harvey (1578-1657) had proved that the motion of the blood "was, as it were, in a circle". It is still more surprising that Hales's fundamental observations should have led to little further work on the subject until a hundred years later, when Jean Leonard Marie Poiseuille (1797-1870), in the 1820's, used a mercury U-tube manometer, 7 mm. in diameter, connected to the artery by a lead tip filled with sodium bicarbonate as an anticoagulant, to demonstrate that the pressure was similar in all parts of the main arterial tree and that it varied with respiration.

The use of mercury meant a significant reduction in the length of the tubing used by Hales (nine feet), and the anticoagulant allowed continuous observations. Francois Magendie increased the sensitivity of the instrument by connecting the pressure source to a mercury reservoir of large surface area to which a narrow-bore (2 mm.) indicator tube was attached.

The first instrument to measure blood pressure in man by the indirect method was designed by Jules Herisson (Figure II), who described his results in a pamphlet published in 1834 and translated into English in 1835. A mercury reservoir of metal, closed distally by a membrane, was applied to the artery and the oscillations of

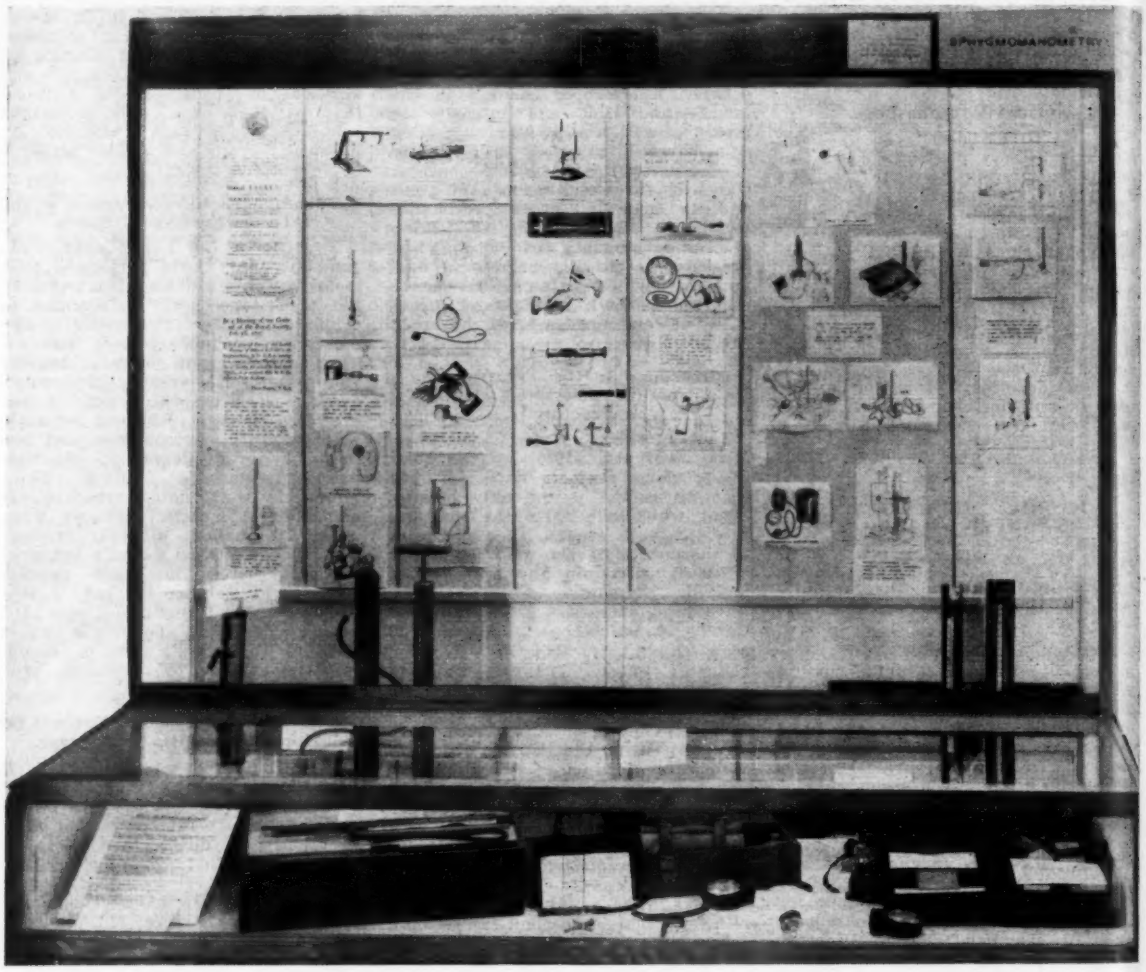

FIGURE I.
The display.

[1] This paper was prepared to accompany an exhibit illustrating the evolution of the sphygmomanometer, shown at the Asian-Pacific Congress of Cardiology in June, 1960. The exhibit is currently on display at the Hall of the Medical Society of Victoria (Figure I).

the mercury in an attached glass column were noted as the pressure was released and the pulse returned. The earliest exact records were not made in man until the middle of the century, when several observers, notably Jean Faivre of Lyons, began to make direct measurements during amputations, a procedure presumably made possible by anæsthesia; the apparatus was essentially that described by Poiseuille. Faivre also directly measured pulmonary artery pressure in animals.

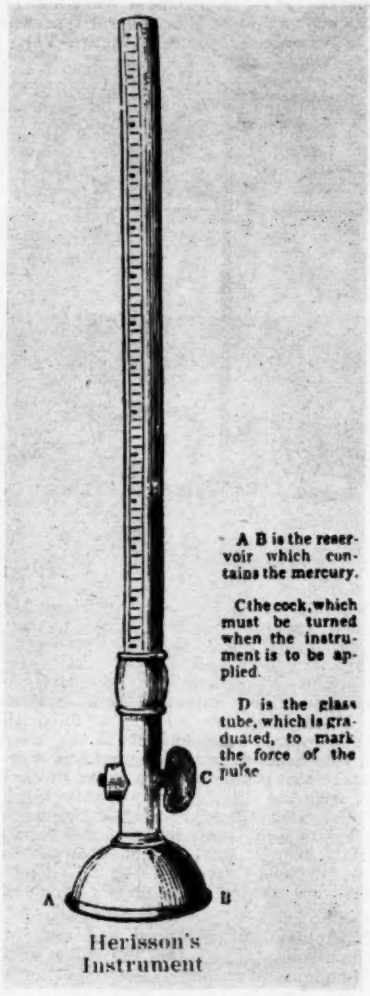

FIGURE II.
Herisson's instrument.

Again it was Poiseuille's apparatus which Carl Ludwig (1816-1895) of Leipzig modified by putting a float on top of the mercury so that he could record on a moving drum carrying smoked paper fluctuations of the mercury column too quick for the eye to follow. The kymograph (1847) was a vital contribution to physiological technique, and was an essential tool in all subsequent investigations of blood pressure.

The first indirect measurements of blood pressure in man were made by Karl Vierordt (1818-1884) at Tubingen. He devised the first sphygmograph (1854) and he made inaccurate estimations of blood pressure by putting weights on the lever in contact with the radial artery

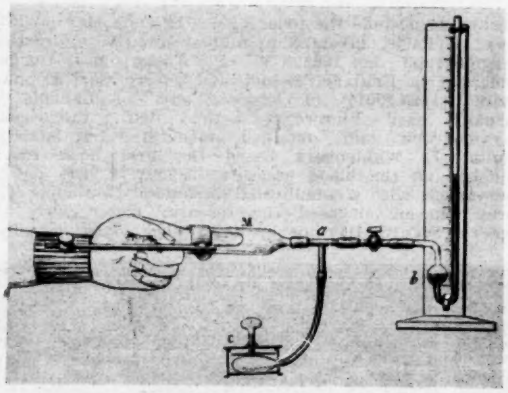

FIGURE III.
Marey's finger sphygmomanometer.

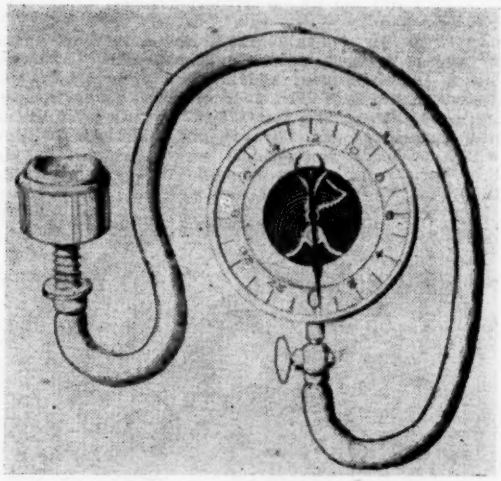

FIGURE IV.
One of von Basch's instruments.

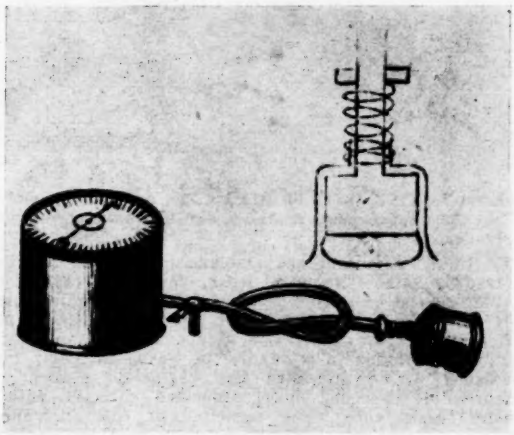

FIGURE V.
Another design by von Basch.

sufficient to occlude the pulse. Jules Etienne Marey (1830-1910), of Paris, invented a simpler and more practical sphygmograph in 1863; W. B. Foster and Burdon-Sanderson in England, Behier and Pierre Carl Edouard Potain (1825-1901) in France, and L. Landois in Germany used Vierordt's method with the better sphygmograph and obtained moderately satisfactory results. L. Waldenberg based the first book to be published on the blood pressure in man (1880) on his observations with a complicated variant of this apparatus. Marey himself enclosed the forearm (later, only the finger) (Figure III) in a water-filled glass container

FIGURE VI.
Hill and Barnard's sphygmometer.

connected to his sphygmograph, to a mercury manometer and to a flask which could be raised or lowered to alter the pressure about the forearm. As the excursions of pressure with each pulse wave were recorded Marey was able to study (1876-1878) both systolic and diastolic pressures, the latter being taken as the point at which pressure fluctuations were maximal. In view of this work it is very reasonable that a quarter of a century later Potain should dedicate his monograph on blood pressure to Marey. It was with an improved sphygmograph, not a sphygmomanometer, that F.

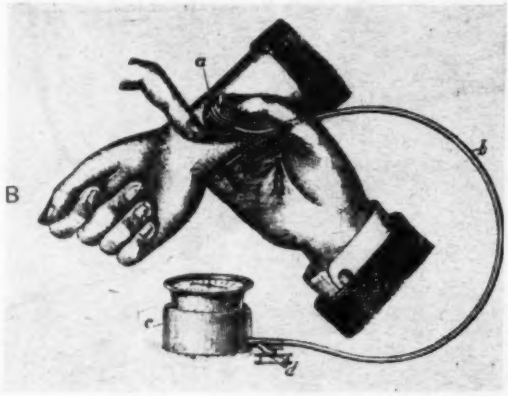

FIGURE VII.
Improved von Basch sphygmomanometer designed by Potain.

Mahomed's (1849-1884) classic studies on clinical aspects of blood pressure were made, in the decade preceding his early death.

The first convenient sphygmomanometer was described in 1880 by Samuel Siegfried Ritter von Basch (1837-1905) of Vienna, but only systolic pressures were studied, probably for technical reasons. The instrument was at first water-filled, with a mercury U-tube manometer, but it was later modified in a number of ways. An early form consisted of a water-filled bag or *pelote* enclosing a compressible mercury bulb connected directly with a vertical glass tube. The principle of this instrument seems to me to be the same as that used by Herisson. Pressure was applied to the artery until the pulse was occluded, and released until it returned, the systolic pressure being reflected in the height of the mercury column. The temporal artery was found to give better results than the radial for obvious reasons, but in animals von Basch was able to demonstrate the accuracy of his method by comparing it with a direct reading taken in the contralateral femoral artery. Later von Basch tried an air-filled system and a spring manometer (Figure IV). The *pelote* was also modified so that one end (or diaphragm) pressed on the artery while the other end, also a membrane, was pushed on by the observer's finger; the interior of the *pelote* was connected by tubing to the manometer. There were other variants (Figure V) but the final instrument of this general type was Hill and Barnard's sphygmometer (1896) (Figure VI).

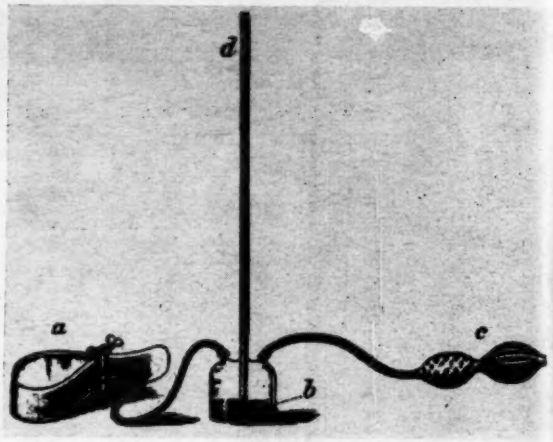

FIGURE VIII.
Sphygmomanometer of Riva-Rocci.

Hermann Sahli (1856-1933) of Switzerland and I. Zadek both modified von Basch's instrument to incorporate a mercury U-tube; the former model was designed with an extendable limb (to reduce its size for carrying) and a narrow bore to ensure maximum sensitivity to pressure fluctuations. The most important modification was that of Potain (1889) (Figure VII); he filled the ball or *pelote* with air and connected it to an aneroid manometer, and this readily portable apparatus was commonly used by interested physicians. In spite of the objections to its use with an instrument of this type, it seems that the radial artery pressure was that generally studied. The systolic end-point was determined by palpation, or, in appropriate instruments, by the disappearance of the pressure oscillations produced by the pulse waves. Diastolic pressure created little interest for another decade or more.

The next major advance was the description of a sphygmomanometer, in principle the same as that in use today, by Scipione Riva-Rocci (1863-1937) of Pavia, who had used the instrument for some years prior to the publication of his paper in 1896. It consisted of a rubber bag of bicycle tubing, surrounded by an inelastic cloth sleeve 4·5 cm. wide, connected to a rather cumbersome mercury manometer and to a rubber bulb (Figure VIII). The point of reappearance of the pulse after occlusion of the artery by raising the pressure was taken as the systolic pressure. In the same year Leonard Hill and H. Barnard described a sphygmomanometer with a similar cuff (also 4·5 cm. wide), a small pump and a release valve, but with an aneroid manometer (Figures IX and X). The latter's greater sensitivity to pressure fluctuations allowed determination of the pressure levels at which they were visible; various points in relation to these were taken as the diastolic level or the mean level. It may be noted that a cuff filled with water had been used by C. S. Roy (1854-1897) and J. G. Adami (1862-1926) in 1890.

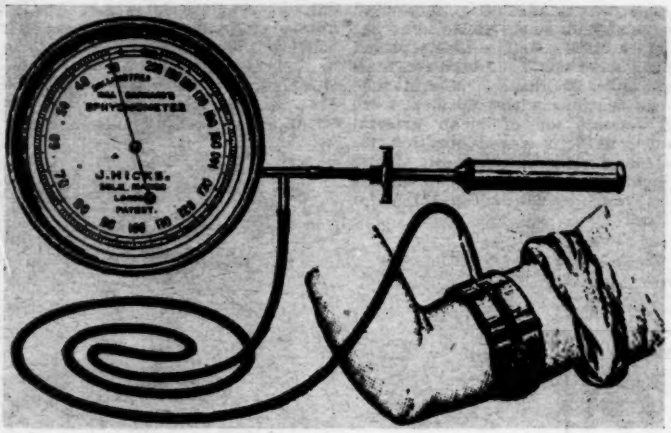

FIGURE IX.
Hill and Barnard's sphygmomanometer.

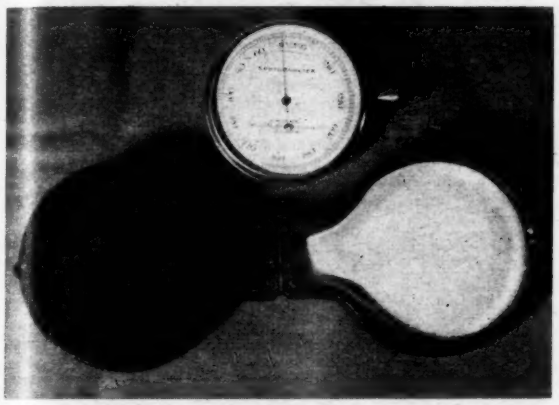

FIGURE X.
Sphygmometer in case.

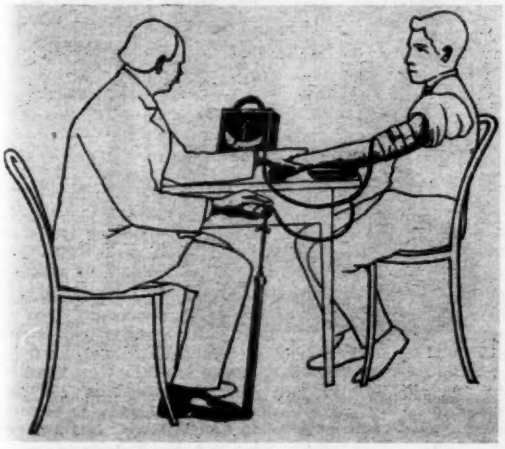

FIGURE XI.
The apparatus of von Recklinghausen showing similar method of use to that of Martin's first instrument.

Hensen in 1900 and von Recklinghausen (Figure XI) in 1901 were the first to realize that Riva-Rocci's instrument frequently gave too high a reading because the cuff was too narrow, and they were closely followed by C. J. Martin (1866-1955), who made comparative studies of

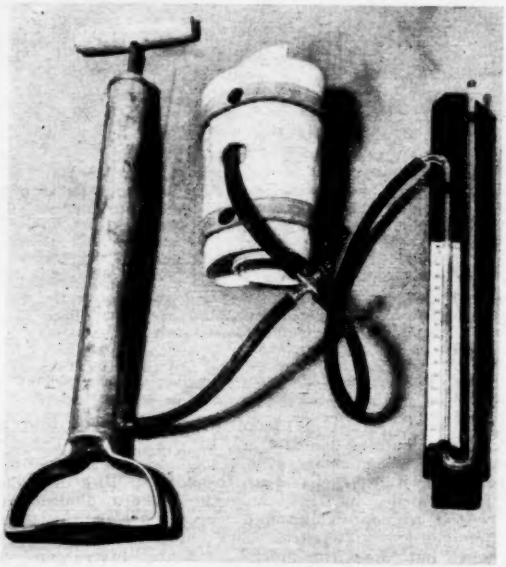

FIGURE XII.
An early Martin's sphygmomanometer employing a bicycle pump; there is a canvas external support to the inflatable cuff. This model was manufactured in Melbourne.

most of the variants in use while acting as professor of physiology in Melbourne. The work of these authors indicated that a 10 to 12 cm. cuff width was adequate. Martin's first instruments (Figures XII and XIII) were made locally by W. J. McCaw; apart from the length of the box (20 inches) the apparatus must have been inconvenient on account of its weight at the stage when he was using lead as an external support to the arm-band. A copy of Martin's first set of instructions is set out in the Appendix. By 1905 he had adopted Mummery's suggestion; the outer

layer of the inflatable cuff was made of a semi-rigid canvas-and-rubber mixture so that no separate external support was necessary (Figure XIV). He had also replaced the bicycle pump with a rubber bulb and the overall length when packed was only 13 inches. Martin also showed that the pressure fluctuations with each beat were not a reliable index of diastolic or of mean arterial pressure, but this continued to be a vexed question for another decade or so. It is of interest that Sir James Mackenzie (1853-1925) considered Martin's instrument the most appropriate of many variants available (1918) for

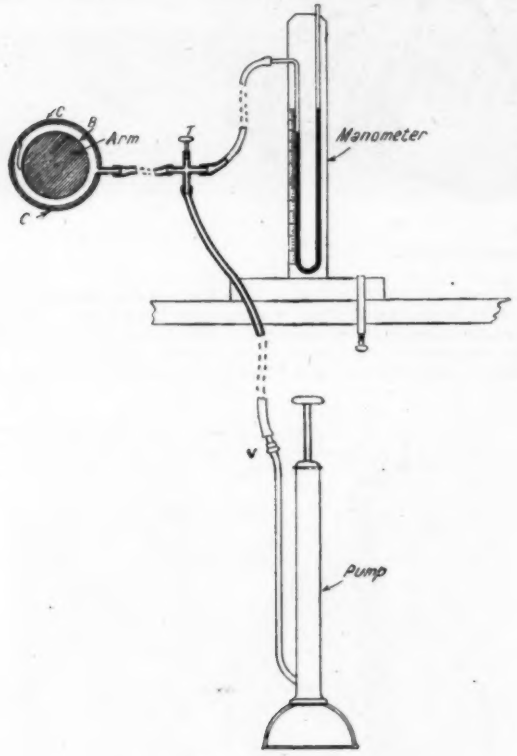

FIGURE XIII.
Diagram from Martin's paper (1903).

clinical work, and it is from this instrument that the successive changes leading up to the modern sphygmomanometer are most readily traced. A useful technical advance was the mercury trap to avoid spilling introduced by Down Bros. in 1906, and there were modifications in regard to connexions and valves, mainly introduced for convenience (Figures XIV and XV). The most efficient, but also the most elaborate, instrument was described by Joseph Erlanger, an American physician, in 1903, and was widely used as a standard; it incorporated a sphygmographic tracing of the pressure changes accompanying the pulse waves. Other popular American variants were those of H. W. Cook (1903) and W. B. Stanton (1903).

The next major advance was the introduction of the auscultatory method which stems from the description of the sounds given by Nikolai Sergeyevich Korotkoff (1874-1920) of St. Petersburg in 1905 to a meeting of the Imperial Military Medical Academy. The published report of this important discovery is about 200 words in length, and is followed by some discussion, mostly critical. However, the method was widely and rapidly adopted.

Many other methods of estimating the blood pressure were described besides the major advances outlined above. M. V. Pachon (1867-1939) (1909) and Rivers (1897) elaborated on the principle of von Basch's instrument,

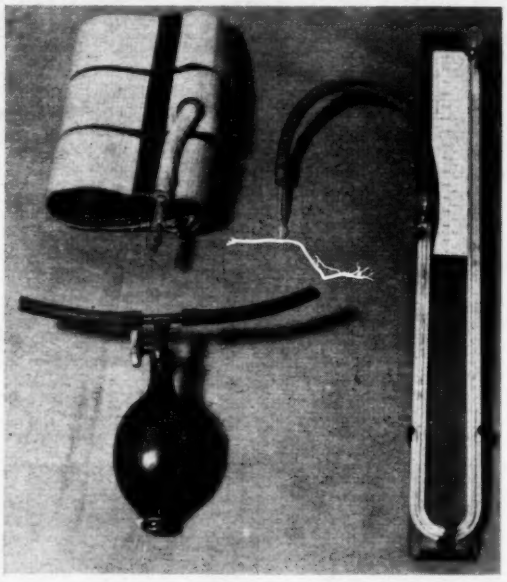

FIGURE XIV.
The valve is now placed near the bulb. The outer layer of the cuff itself is rigid, and there is a mercury trap on the U-tube.

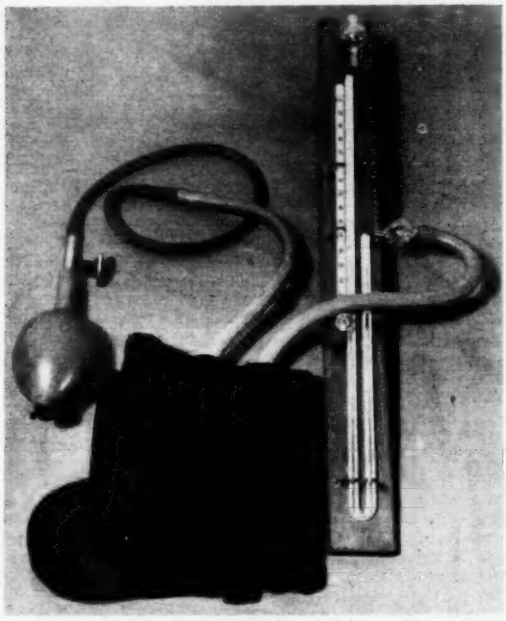

FIGURE XV.
This model has two tubes leading from the cuff, and the bore of the U-tube is narrower. The inflatable cuff is now enclosed in a cloth bag.

and so did George Oliver (1841-1915). According to Pickering (1955) a modification of Pachon's oscillometric method is still widely used on the Continent. The

complicating effect of the soft tissues of the arm and the inconvenience of undressing the patients were factors in the transient popularity of attempts to assess the blood pressure in the fingers. Angelo Mosso (1846-1910) of Turin, a pupil of Marey, described a plethysmographic method applicable to one or several fingers in 1895 (Figure XVI; see also Figure III), but Gustav Gärtner's

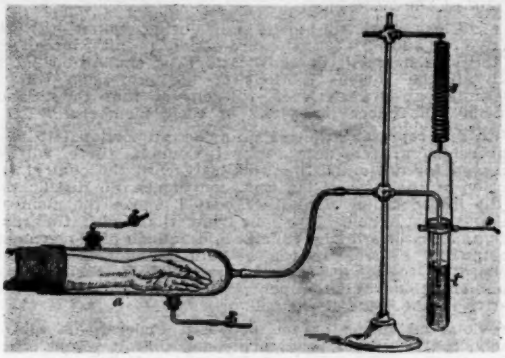

FIGURE XVI.
Mosso's plethysmograph.

(1855-1921) technique (1899) was the more widely used (Figure XVII). A pneumatic ring was applied to the little finger and inflated after a tight elastic stocking had been applied distally and removed. The pressure was noted as the colour returned to the finger during release

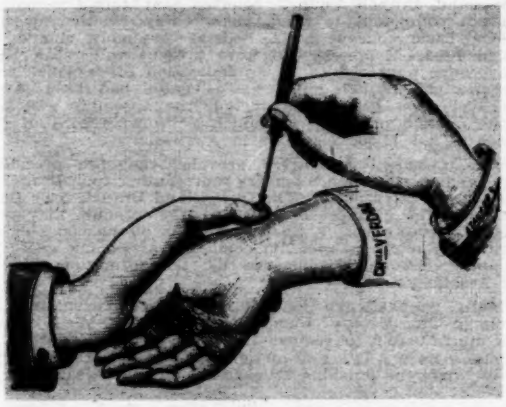

FIGURE XVII.
Gärtner's tonometer.

of pressure in the ring. A. M. Bloch (1888) described a simple but inaccurate pocket manometer (Figure XVIII). A metal button connected directly to a mechanical gauge was applied to the observer's thumb, which in turn was applied to the subject's radial artery.

Modern developments in the direct measurement of arterial pressure are briefly reviewed by Pickering (1955), who also reviews the relationship between direct and indirect readings. The first two decades of the twentieth century saw clinical sphygmomanometry established as a routine procedure, largely due to the pioneer clinical studies of Mahomed, Clifford Allbutt and Lauder Brunton in England, H. Huchard and Potain in France, and T. C. Janeway and W. H. Cook in America.

At the beginning of this paper it was stated that there were some mildly surprising aspects to the history of taking the blood pressure. Superficially at least it is surprising that, after three-quarters of a century of practical sphygmomanometry, the normal blood pressure remains undefined and indeed a matter of considerable controversy, the more so as a rather sceptical Sir James Mackenzie had pointed out a useful approach to this problem over 30 years ago.

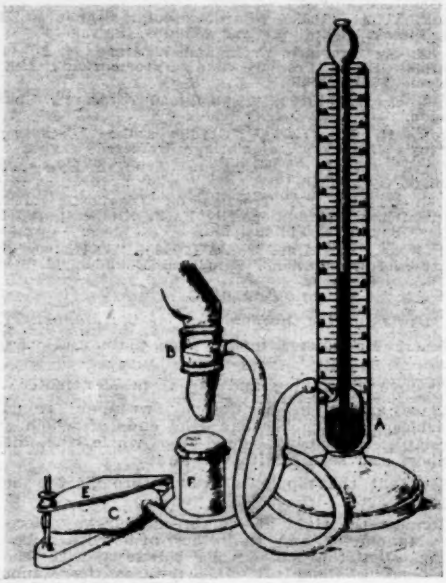

FIGURE XVIII.
Bloch's sphygmometer.

It is possible that when we have sufficient knowledge of the blood pressure we shall find it of considerable help in our work, but there is no prospect of our acquiring that knowledge in the near future. It has never yet dawned on the great majority of writers on this subject how this knowledge is to be acquired. . . .

I would suggest that those of you who are general practitioners should take note of the blood pressure in a number of your patients, particularly those you will be able to keep under observation. Take these observations in the young as well as the elderly. These observations need not at first be taken frequently, but as circumstances permit. . . . I am confident, if the question be undertaken, you will discover for yourself lines to follow and problems to solve and you will need no further guidance.

Acknowledgements.

I am indebted to Miss A. Tovell for her invaluable assistance in collecting data and arranging the material. The illustrations for this paper were prepared by Mr. T. F. Cottier, who also illustrated the recent review of the evolution of the stethoscope but whose valuable collaboration was inadvertently not acknowledged. Additions to the collection would be greatly appreciated.

References.

Although I have referred to the original descriptions when available, a full list seems inappropriate in the present brief survey. The sources are indicated in one or other of the following works, from which I have freely drawn. Most of the illustrations, when not from our own collection, are taken from instrument catalogues or textbooks of the turn of the century.

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Appendix.

Hints for the Manipulation of the Manometer.[1]

Insert Manometer in the sole plate and clamp to table.

Remove glass plug and cap from Manometer tube.

Place armlet in position by wrapping round the left biceps the rubber bag (the ends of which should overlap), then bend round the whole the inelastic support and secure with the straps.

See that the nipple is drawn through the hole in support.

Connect the right arm of brass four-way piece with the Manometer and the other arm with tube from pump. Let the subject sit sideways with the left arm resting along the table towards the Manometer.

The operator sits opposite the Manometer where he can conveniently read the scale and keep the fingers of his left hand on pulse of subject; while the pump is manipulated with his right.

Raise the pressure by firm steady strokes of the pump avoiding jerky movements which are likely to jump the mercury out of the tube. The pressure is raised somewhat above the point where the pulse is obliterated, then air is allowed to leak in slowly (by slightly loosening screw of four-way piece) and the point noted where the return of pulse can first be felt.

The scale number doubled, gives the pressure in millimetres of mercury.

Make two or three observations and take average.

The first readings will often be 5 mm. higher, due to slight agitation on part of subject.

Note: Before connecting pump with Manometer it is advisable to make a few strokes to ensure the free working of the valve. Should any mercury be lost simply refill to the zero mark.

BRYAN GANDEVIA,
Honorary Curator, Museum of Natural History, Medical Society of Victoria.

[1] Copy of instructions supplied with early model of Martin's sphygmomanometer (before 1900).

Correspondence.

AN AUSTRALIAN MEDICAL ASSOCIATION.

SIR: Convocation and the recent meetings of the Queensland Branch of the British Medical Association reaffirmed this Branch's criticism of the draft constitution of the proposed Australian Medical Association. We consider that the present organization of the profession in Australia, through the existing Branch Councils and the Federal Council, has worked well over the years and that, basically, this organization should not be changed.

We are opposed to the following points which we believe are inherent defects in the proposed Federal Assembly, whose two main purposes appear to be the election of office bearers of the Association and the formulation of policy—two very important functions. It seems wrong to us that the proposed Federal Assembly, containing as it will certain groups of members having more than one voice, should make such decisions. Surely the election of office bearers should be made only by members at the annual general meeting of the Association.

We believe that the steps now being taken—(*a*) the effective organization of the profession in all States, and (*b*) the establishment of convocations or similar bodies, in which all the various sections of the profession will be represented at Branch level—will ensure that the Branch Councils will reflect the views of their members.

With fair representation of Branches proportional to their membership on the new Federal Council, there will be no reason for not entrusting this body with the control and direction of the Association and, conversely, no justification for the interpolation of another body between the membership and its Council. It is our view that, with the rapid shifts and changes in the policies and actions of Government departments, control by the Federal Council is essential. If there is to be a Federal Assembly, it should make recommendations only on policy which should be the prerogative of the Federal Council.

Previous criticisms of the proposed Federal Assembly—namely, that it would be cumbersome, that it would create administrative difficulties and that it would be costly—are still valid. However, the plain fact is that the Royal Colleges have clearly indicated that they are unable or unwilling to affiliate with the Australian Medical Association. This means that the purpose for which the Assembly was conceived, once thought vital, no longer exists.

The decision of the Federal Council to include the Federal Assemly in the new Australian Medical Association appears to be based on the recommendations of the Convention of the profession held in Sydney in November, 1960. It is pointed out that these were *recommendations* only. The Queensland Branch Council believes that this Convention was not competent to decide irrevocably whether or not such a basic concept as a Federal Assembly should be implemented. Members who were present will recall that many votes appeared to be an indication of personal preferences, and though obviously delegates had been given some discretion, the vote to include the Assembly was not, in the opinion of Branch Council, a proper record of the wishes of our 11,000 members in Australia.

Federal Council Article 28 provides that the president at the request of seven members representing four Branches may order a referendum. The Queensland Branch feels that, in view of the widespread criticism, a referendum may well be advisable to ensure a clear expression of the views of all members. Such a referendum could be carried out speedily, and need not delay unnecessarily the formation of the new Association.

Finally, we challenge the philosophy of the recent leading article in THE MEDICAL JOURNAL OF AUSTRALIA. We consider it is much better to remove the sand from the cogs of a machine before it is set in motion than to start the machine hastily while the finishing touches are still to be carried out.

Yours, etc.,

P. A. EARNSHAW,
President, Queensland Branch of the British Medical Association.

British Medical Association House,
88 L'Estrange Terrace,
Kelvin Grove,
Brisbane, W.1.
April 26, 1961.

THE ANTIBIOTIC SENSITIVITY OF STAPHYLOCOCCUS AUREUS IN THE BRISBANE HOSPITAL DURING 1959.

SIR: The article on "The Antibiotic Sensitivity of Staphylococcus Aureus in the Brisbane Hospital during 1959", appearing in your Journal on April 15, 1961, certainly shows a low incidence of resistance to erythromycin in in-patient strains of staphylococcus. One may take issue, however, with the statements repeated throughout the article con-

cerning "the known facility with which staphylococci develop resistance to this antibiotic [erythromycin]". As Dr. Kerr has quoted a reference for this development of resistance (Lowbury, 1960), references may also be quoted to show that such is not the case.

Fears regarding the emergence of erythromycin-resistant bacteria were expressed early and demonstrated by, in particular, in-vitro studies. The concept of "last defence and rapid resistance" has been maintained in large measure in the United Kingdom until recently.

The passage of time and world-wide usage of erythromycin present a different picture. Erythromycin is no longer a "last defence" drug, for many other antibiotics have been introduced recently.[1]

A number of reports (Garrod, 1955;[2] Griffin *et alii*, 1958;[3] Goodier and Parry, 1959;[4] Williams, Talbot and Maughan, 1959;[5] Buch, 1959[6]) make it clear that organisms do not develop rapid resistance to erythromycin, as was previously believed. In certain cases it appears, in fact, that there is a higher incidence of sensitivity to erythromycin than there is to other antibiotics in common use.

Yours, etc.,

Abbott Laboratories,
G.P.O. Box 3698,
Sydney.
May 2, 1961.

A. FRANCIS IRVINE,
Medical Director.

GENERAL PHARMACEUTICAL BENEFITS.

SIR: The Medical Advisory Committee is that body concerned with additions to and removals from the list of drugs, etc., on the Pharmaceutical Benefits Scheme. Would it be possible for that Committee to state perhaps by circular or newsletter why some drugs are dropped from the list, why some drugs are restricted to pensioners only, etc.? Secrecy in these matters is surely not necessary, and we would have some explanations for patients.

Yours, etc.,

May 8, 1961. "NEWCASTLE G.P."

[1] *Brit. med. J.*, 1961, 1: 563.
[2] *Proc. roy. Soc. Med.*, 1955, 48: 355.
[3] "Antibiotics Annual", 1957-1958: 370.
[4] *Lancet*, 1959, 1: 356, 357.
[5] *Brit. med. J.*, 1959, 1: 1374.
[6] *Fed. Proc.*, 1959, 5: 135.

Notes and News.

Nuffield Foundation Australian Advisory Committee: Research Grant.

The Chairman of the Nuffield Foundation Australian Advisory Committee, Mr. Colin Syme, has announced that a grant of £A3100 over a period of three years has been made to Dr. R. L. Kirk, Department of Zoology, University of Western Australia, for studies of genetically controlled differences in serum proteins. Dr. Kirk has been engaged for several years on studies of newly discovered inherited factors in blood, particularly their occurrence among various populations in South and South-East Asia and in Australian aborigines. The grant made available to him by the Nuffield Foundation will enable Dr. Kirk to carry out more intensive studies of some of these factors, including the gamma-globulin groups and the levels of the enzyme pseudocholinesterase present in blood serum. Dr. Kirk's investigations of the gamma-globulin groups, which involve a factor present commonly in the blood of persons suffering from rheumatoid arthritis, will be carried out in close collaboration with Mr. G. H. Vos, of the King Edward Memorial Hospital, Perth, and with Dr. A. G. Steinberg, of the Western Reserve University, Cleveland, Ohio.

Smallpox in 1960.

In spite of sporadic appearances outside the endemic areas of the world, smallpox appears to be retreating, according to the figures for 1960, published in the World Health Organization *Weekly Epidemiological Record*, April 21, 1961. The number of cases in 1960, hardly more than

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED APRIL 15, 1961.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	1(1)	..	1(1)	..	..	..	..	..	2
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	..	..	..	..	..	..	3	..	3
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	1(1)	1(1)	..	..	..	..	..	..	2
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	1	..	..	..	..	..	..	..	1
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	7(2)	12(10)	..	..	1	..	1	..	21
Diphtheria	4	..	..	..	..	..	..	..	4
Dysentery (Bacillary)	..	13	2(2)	4(4)	..	..	3	..	22
Encephalitis	1(1)	..	..	..	..	..	..	..	1
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	124(57)	51(29)	20(1)	21(13)	7(5)	5(1)	1	3	232
Lead Poisoning	..	..	2	..	..	..	..	..	2
Leprosy	..	..	..	..	..	..	..	..	..
Leptospirosis	..	..	2(1)	..	..	..	..	..	2
Malaria	..	..	..	..	..	..	..	..	..
Meningococcal Infection	1	..	..	..	..	..	..	..	1
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	1(1)	..	..	..	..	..	1
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	1	1(1)	..	..	..	..	..	..	2
Puerperal Fever	..	..	1(1)	..	..	..	..	..	1
Rubella	..	12(6)	..	8(3)	8(8)	..	..	1	24
Salmonella Infection	..	..	..	1(1)	1(1)	..	..	..	2
Scarlet Fever	9(2)	17(2)	1	6(3)	1(1)	1	..	..	35
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	1(1)	..	..	..	..	..	1
Trachoma	..	..	..	..	2(1)	..	..	..	2
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	46(21)	13(8)	23(8)	3(3)	5(5)	5(3)	..	..	95
Typhoid Fever	..	..	..	..	..	..	..	..	..
Typhus (Flea-, Mite- and Tick-borne)	..	..	..	..	..	..	..	..	..
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

51,000, is distinctly less than that for any previous year. The decrease compared to 1959—of the order of 23,000 cases—is attributable almost entirely to the improvement of the situation in East Pakistan and India, where some 27,000 cases were notified in 1960 as against about 49,500 the previous year. Certain other countries, Angola, Basutoland, Cambodia, Cameroun, Iraq, Qatar, Singapore and Viet-Nam, did not report any smallpox in 1960, although a few cases were observed in previous years. It would be premature to conclude that the disease had been eradicated from these countries, however, until after an observation period of several years, the *Record* points out.

In 1960 many towns near a port or airport reported cases of smallpox, one of the rare remaining quarantinable diseases likely to be transmitted from one country to another by sea or air traffic. The most notable instances of this during the year were the export by sea of smallpox from Calcutta and the Persian Gulf to Suez, by air from India to Great Britain and, again from India, to Moscow, where a small epidemic resulted. The long duration of the incubation period of the disease, the slight symptoms which may pass unnoticed, especially in persons who have been previously vaccinated, and the increasing speed of aircraft, are all factors which are making the transport of smallpox by air a more and more frequent occurrence.

The number of cases of smallpox throughout the world, which reached 489,000 in 1951, remained below 150,000 from 1952 to 1957. In 1958 epidemics in East Pakistan and India (218,000 cases) brought the world total up to 242,000, not including continental China. In 1959 the number fell to about 74,000, including 50,000 in East Pakistan and India.

Medical Practice.

NATIONAL HEALTH ACT.

THE following notice is published in the *Commonwealth of Australia Gazette*, No. 36, of May 4, 1961.

NATIONAL HEALTH ACT, 1953-1959.

Notice in Pursuance of Section 134A.

NOTICE is hereby given that, the Medical Services Committee of Inquiry for the State of New South Wales, after investigation, having reported on the 1st day of February, 1961, concerning the conduct of Anthony Joseph of Main-street, Lithgow, a medical practitioner, in relation to his provision of medical services under Part IV of the *National Health Act* 1953-1959, I, Donald Alastair Cameron, Minister of State for Health, did on the thirtieth day of March, 1961, reprimand the said Anthony Joseph.

Dated this thirtieth day of March, 1961.

DONALD A. CAMERON,
Minister of State for Health.

Nominations and Elections.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Richardson, Raymond Proudlock, M.B., B.S., 1953 (Univ. Sydney), 11 Laurence Street, Manly.

The undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Han, Lap Kwong, M.B., B.S., 1960 (Univ. Sydney), Royal Adelaide Hospital, North Terrace, Adelaide.

Klimowski, Leopold Richard, M.B., B.S., 1960 (Univ. Adelaide), 61 Portrush Road, Toorak Gardens.

The undermentioned have been elected as members of the South Australian Branch of the British Medical Association:

Foy, Bryan Nelson, M.B., D.S., 1954 (Univ. London), M.R.C.O.G.; Maddern, Max Wilfred, M.B., B.S., 1960 (Univ. Adelaide); Rice, John Peter, M.B., B.S., 1960 (Univ. Adelaide); Rutter, John Lyall, M.B., B.S., 1957 (Univ. Adelaide); Krieger, Geoffrey Edward, M.B., B.S., 1960 (Univ. Adelaide).

Deaths.

THE following deaths have been announced:

MURDOCH.—Alexander Wallace de Winton Murdoch, on April 29, 1961, at Toorak, Victoria.

WHITE.—Frederick John White, on May 8, 1961, at Kew, Victoria.

Diary for the Month.

MAY 20.—Victorian Branch, B.M.A.: Country Branch Meeting.
MAY 23.—New South Wales Branch, B.M.A.: Hospitals Committee.
MAY 24.—Victorian Branch, B.M.A.: Branch Council.
MAY 25.—New South Wales Branch, B.M.A.: Branch Meeting.
MAY 25.—South Australian Branch, B.M.A.: Scientific Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): Medical Officers to Sydney City Council. All contract practice appointments in New South Wales. Members are requested to consult the Medical Secretary before undertaking practice in dwellings owned by the Housing Commission.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations, other than those normally used by the Journal, and not to underline either words or phrases.

Authors of papers are asked to state for inclusion in the title their principal qualifications as well as their relevant appointment and/or the unit, hospital or department from which the paper comes.

References to articles and books should be carefully checked. In a reference to an article in a journal the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of article. In a reference to a book the following information should be given: surname of author, initials of author, year of publication, full title of book, publisher, place of publication, page number (where relevant). The abbreviations used for the titles of journals are those of the list known as "World Medical Periodicals" (published by the World Medical Association). If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full data in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

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